U.S. ENVIRONMENTAL PROTECTION AGENCY

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY

REGIONS VI, VII, VIII

Trial A.O. 9-29-93

DRAFT
SITE INSPECTION PRIORITIZATION REPORT
FOR THE
LITTON SYSTEMS, INC., ADVANCED CIRCUITY DIVISION
SPRINGFIELD, MISSOURI
CERCLIS NO. MOD007152903

EPA CONTRACT NO. 68-W8-0122
EPA WORK ASSIGNMENT NO. 53-7JZZ
EPA REGION VII

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PROJECT NO. 12-D253-12

SEPTEMBER 1993

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Final A.O. 9-29-93

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SITE INSPECTION PRIORITIZATION REPORT
LITTON SYSTEMS, INC., ADVANCED CIRCUITRY DIVISION SITE
SPRINGFIELD, MISSOURI
CERCLIS No. MOD007152903

1.0 INTRODUCTION

Jacobs Engineering Group, Inc. (Jacobs) was tasked by the U.S. Environmental Protection Agency (EPA) to evaluate the Litton Systems, Inc., Advanced Circuitry Division (Litton) site (CERCLIS No. MOD007152903) as a potential candidate for an Expanded Site Inspection (ESI) using the Site Inspection Prioritization (SIP) guidelines. The evaluation included a review of EPA and state file material, and a review of target information. Hazard Ranking System (HRS) scoring was performed using the PA Scoresheet methodology and the PREscore methodology (Appendix A).

The site score assigned using the PA Scoresheet methodology was greater than 28.5; therefore, the PREscore methodology was subsequently used to more accurately score the site. A waste characteristics score of 100 was assigned based on two sources: a two-acre tract of land upon which wastewater was irrigated and a 71,250-cubic foot wastewater disposal pond which contained 12 million gallons of wastewater. The individual pathway scores were as follows: groundwater, 91.33; surface water, 0; soil exposure, 3.37; and air, 5.28. The total site score for the Litton site was 45.77 (Appendix A).

2.0 SITE BACKGROUND

The Litton site is in the northwestern portion of the City of Springfield at 4811 West Kearney Street, Greene County, Missouri (Figure 1) (Reference 1). The site is located in the southeast quarter of the southwest quarter of Section 6, Township 29 North, Range 22 West, and the geographical coordinates of the site are 37°14'43.48" North latitude and 93°22'32.97" West longitude (References 2 and 3). The site, which is approximately 50 acres in size, is currently owned by Litton Precision Products, Inc. and Litton Industries, Inc. who purchased the site in three different parcels between 1963 and 1964 from the Industrial Development Corporation, the City of Springfield, and Mr. and Mrs. Roscoe Prescott. Until the time of purchase, the site property was either vacant or utilized for agricultural purposes (Reference 1). Litton has manufactured printed circuit boards on-site since approximately 1963. The printed circuit boards are plated with copper, nickel, pyrophosphate, rhodium, gold and tin. Plating wastewater generated on-site was disposed in various pits, ponds, lagoons, and sinkholes in and around the site property (Reference 4). Estimates of the quantity of plating wastewater generated vary from 200,000 gallons per day (gpd) to 34,000 gpd after waste reduction methods were implemented (Reference 1). An estimated total of 193,800,000 gallons of plating wastewater may have been disposed on-site. The site is currently active.

In 1972, Litton received an operating permit from the Missouri Clean Water Commission (Reference 1). Plating wastewater was originally disposed by irrigation onto a small portion of the site and discharged to an on-site sinkhole. Shortly after the site began operating, storage and settling ponds were constructed for plating wastewater to be discharged through a series of terraces into a pit (Reference 5). The Missouri Department of Natural Resources (MDNR) issued Litton a National Pollutant Discharge Elimination System (NPDES) permit in December 1974. The NPDES permit expired on January 17, 1975 when Litton received the MDNR's approval to construct and operate a new discharge system in which plating wastewater was discharged into a newly constructed lagoon and land-applied to a two-acre portion of the site. After the new discharge system was constructed, use of the storage and settling ponds was discontinued (References 1 and 5). Accumulated sludges were removed from the ponds and disposed at an approved facility. A sludge pit and an acid disposal pit were also cleaned up in the late 1970s (Reference 5).

The MDNR first conducted an inspection of the Litton site on September 25, 1979. MDNR discovered that plating wastewater, which was discharged to the lagoon system, was overflowing and releasing wastes into a nearby sinkhole (Reference 6). The following September, the MDNR issued Litton a Consent Order requiring the discharge of plating wastewater to cease (Reference 1). On March 24, 1981 the MDNR conducted a sampling investigation of the Litton site and collected six water samples. Four samples of standing water (Sample Nos. 81-9621, 81-9622, 81-9623 and 81-9624) were collected respectively from three on-site ponds designated as Ponds A, B, and C, and a sanitary lagoon. Two groundwater samples (Sample Nos. 81-9619 and 81-9620) were collected from two monitoring wells, located on-site (Reference 7). No information was available in the file material regarding the installation of these monitoring wells. The samples were analyzed for volatile organic compounds (VOC). Several VOCs were detected at high concentrations in all of the samples (Reference 7). The analytical results are provided in Table 1.

The MDNR conducted another sampling investigation at the Litton site on May 20, 1981 in order to determine the source of the VOCs detected in the March 24, 1981 sampling investigation and to evaluate the effect of the VOCs on local groundwater. Two groundwater samples (Sample Nos. 81-6237 and 81-6238) were collected from the on-site monitoring wells, and ten surface water samples were also collected. Sample No. 81-6227 was collected from Fulbright Spring as a background sample. Sample No. 81-6228 was collected from an unnamed spring. Sample Nos. 81-6229 and 81-6230 were collected from Ritter Spring West. Sample Nos. 81-6231 and 81-6232 were collected from Fantastic Caverns Spring, and Sample Nos. 81-6235 and 81-6236 were collected from Lagoon C and Lagoon A, respectively. The samples collected were analyzed for VOCs. High concentrations of several VOCs were detected in all of the samples except for Sample Nos. 81-6227, 81-6228, and 81-6229. VOCs were not detected in these samples (Reference 8). The analytical results are provided in Table 2.

On March 26, 1982, the MDNR issued an Emergency Directive to Litton requiring them to cease and correct the imminent hazard caused by the sludges and wastewater in Pond A (Reference 9). Pond A was closed later in 1982. On November 10, 1982, the EPA approved Litton's closure report for Pond A, and Resource Conservation and Recovery Act (RCRA) closure was granted. That same year the accumulated sludges in the lagoon constructed in 1975 were removed and disposed at an approved facility. The lagoon was dozed in after the sludges were removed (Reference 1). The file material indicated that a pretreatment system was installed around this time which reduced the quantity of plating wastes generated at the site (Reference 5). Litton was connected to the Springfield municipal sewer system in 1982 (Reference 1).

The MDNR conducted another sampling investigation of the Litton site on January 27, 1988. Three composite surface soil samples were collected from the site property (Sample Nos. 88-0198, 88-0220, and 88-0221). Sample No. 88-0221 was designated as a background sample. One surface water sample and one sediment sample were collected from Ritter Spring West (Sample Nos. 88-0186 and 88-0187, respectively). Three groundwater samples were collected from nearby private residential wells (Sample Nos. 88-0196, 88-0222, and 88-0223). All of the samples were analyzed for VOCs and metals. In addition, the water samples were analyzed for base/neutral/acid extractables (BNA). The analytical results are provided in Table 3. High concentrations of metals were detected in all of the soil samples except for the background sample. Total lead was detected in Sample No. 88-0198 at 290 mg/kg, which exceeds the Missouri Department of Health's (MDOH) recommended safe soil level of 238 mg/kg. Two VOCs were also detected at high concentrations in two of the soil samples. Moderate levels of metals were detected in the water samples, and a few VOCs were detected in the water samples at high concentrations. Sample Nos. 88-0186 and 88-0222 contained 69 µg/L and 44 µg/L of trichloroethylene (TCE), respectively. These concentrations are above the MDOH safe drinking water level of 5 µg/L and EPA's drinking water standards maximum contamination level of 0.005 mg/L. Sample No. 88-0196 contained 24 µg/L methylene chloride which exceeded the MDOH recommended safe drinking water level of 1.9 µg/L (Reference 4). On November 15, 1988 the MDNR resampled the private residential well in which 44 µg/L of TCE was detected. No VOCs were detected in the well at the time of the resampling (Reference 4).

The MDNR completed a Cleanup Assessment for the Litton site on December 14, 1989 based upon the results of the January 27, 1988 sampling investigation. Although the total lead content in the site soils was high, it did not fail the Toxicity Extraction Procedure (TEP) test and it could not be characterized as a RCRA hazardous waste because it could not be identified as a constituent generated from a listed waste. In addition, the exact source of TCE contamination found in Ritter Spring West is inconclusive because several industries in the area utilize TCE. Therefore, the MDNR determined that conditions at the Litton site did not currently warrant its listing on the Missouri Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites (The Registry) (Reference 11).

Litton hired SCS Engineers to conduct a sampling investigation of the Litton site between January 21 and 26, 1991. SCS Engineers installed seven monitoring wells and collected 14 groundwater samples (one from each of the newly installed monitoring wells and one from each of seven pre-existing monitoring wells). All of the wells installed by SCS Engineers were completed in the Springfield Plateau Aquifer and ranged in depths from 11.5 feet to 23.5 feet. No information was available in the file material indicating the date of installation or depths of the seven pre-existing monitoring wells. The sample numbers of the groundwater samples were assigned based upon the monitoring well identification numbers (i.e., Sample Nos. MW1 through MW14). The location of the monitoring wells are designated in Figure 3. Nine surface soil samples were also collected (Sample Nos. B-B1-5.5, B-B1-10, B-B2-6, B-B3-5, B-B3-10, B-B3-15, B-B4-5, B-B4-7, and B-B4-10). The samples were analyzed for metals, VOCs, and BNAs. The analytical results of the soil samples are provided in Table 4, and the analytical results of the groundwater samples are provided in Table 5. The soil samples contained low concentrations of metals and low concentrations of several VOCs. The groundwater samples contained low concentrations of metals and high concentrations of various VOCs (Reference 12).

On August 3, 1993, the MDNR and Litton entered into a Consent Agreement with the following stipulations: Litton will investigate, develop, design, and implement a remedial and monitoring program; the MDNR will utilize a site-specific cleanup assessment provided by the MDOH to determine appropriate cleanup levels for the site; and if the remedial actions do not result in a satisfactory cleanup level, the MDNR will pursue listing of the Litton site on The Registry (Reference 13).

3.0 HAZARD RANKING SYSTEM SCORING

The Litton Systems, Inc., Advanced Circuitry Division site scored 45.77 using the PREscore methodology (Appendix A). All of the pathways were scored as follows: groundwater, 91.33; surface water, 0; soil exposure, 3.37; and air, 5.28 (Appendix A).

3.1 Source/Waste Characteristics

Based on information from the MDNR, several pits, ponds, and lagoons were utilized on-site for storage and discharge of plating wastewater. The file information is unclear on the exact number of surface impoundments utilized during the site's operational history; however, it appears that a total of three pits, three ponds, and three lagoons were utilized at the site. A two-acre area of the site was utilized for irrigation of plating wastewater. Two sources were utilized to calculate the waste characteristics score: Pond A and the two-acre irrigation plot. The file material contained information on the size and holding capacity only for Pond A; therefore, Pond A was the only surface impoundment utilized in calculating the waste characteristics score. Pond A was 71,250 cubic yards in size and contained a maximum of 12,000,000 gallons of plating wastewater. The area of the irrigation plot (two acres) was divided by 0.0062 (the multiple source land treatment divisor) and a value of 322.58 was assigned. The volume of Pond A (71,250 cubic yards) was divided by 2.5 (the multiple source surface impoundment divisor) to get a value of 28,500. Since the sum of 322.58 and 28,500 was greater than 10,000, the maximum waste characteristics score of 100 was assigned. Even though Pond A underwent RCRA closure in November 1982, it can be used as a HRS waste source because MDNR conducted two sampling investigations prior to its closure.

3.2 Groundwater Pathway

The Litton site is located within an internally drained area characterized by karst geology. Much of the precipitation that falls in the area enters sinkholes which funnel water to spring outlets. A significant amount of precipitation percolates through the permeable residual soils to the top of the pinnacled bedrock. These laterally discontinuous perched water zones provide base flow to area springs by slowly releasing groundwater to solution-enlarged conduits. A smaller amount of precipitation bypasses the karst drainage system to recharge the regional Mississippian Aquifer (Reference 1).

Near surface bedrock formations include the Burlington/Keokuk, Elsey/Reed Springs, and Pierson Formations. These units are Mississippian-aged limestones. The Springfield Plateau Aquifer lies beneath the surficial water-bearing zone. This aquifer is located at depths of approximately 250 to 300 feet and is recharged by leakage from the surficial aquifer and recharge from fractures and sinkholes. Pumping of water from this aquifer consists primarily of rural domestic use, and the yield ranges from one to 50 gallons per minute (gpm). This aquifer is highly susceptible to contamination because of its proximity to the surface and the high degree of solution weathering to which it is subjected (Reference 14).

The Northview shale and the Compton-Bachelor limestone formations lie below the Springfield Plateau Aquifer and above the Ozark Aquifer. The Northview formation is approximately 25 to 30 feet thick and may act as an aquitard between the Springfield Plateau and Ozark Aquifers; however, downward leakage from the Springfield Plateau to the Ozark Aquifer does occur (Reference 14).

The Cotter through Potosi Formations which lie below the Northview Formation are comprised of Ordovician and Cambrian dolomites and quartz sandstones over 1,000 feet thick. This formation is known collectively as the Ozark Aquifer. Most wells in the area draw from the Ozark Aquifer which yields 1,000 to 2,000 gpm. Although a minor amount of recharge occurs from the overlying aquifer, the Ozark Aquifer is not highly susceptible to contamination unless poorly cased wells provide a conduit for contaminant transport (Reference 14).

Groundwater usage within a four-mile radius of the site is moderate. A review of well logs identified the presence of 86 private residential wells (Reference 15). A total of 46 of the private residential wells are completed in the Springfield Plateau Aquifer, and the other 40 are completed in the Ozark Aquifer (Reference 15). An estimated population of 209 receive potable water from these wells. This population was calculated by multiplying the 86 wells by 2.43 (the average population per household in Greene County, Missouri, also known as the "county multiplier") (Reference 16). Two City of Springfield municipal wells are located within a four-mile radius of the site and are completed in the Ozark Aquifer (References 2, 17, and 18). Springfield has a total of three municipal wells which function as a backup for the four surface water intakes. These three wells supply an average of one percent of the municipal water supply. The Springfield water supply serves approximately 150,000 people, and the three municipal wells serve an apportioned population of 1,500 people (500 people per well) (References 17 and 18). The number of wells within each distance category and the associated drinking water population were assigned as follows:

Distance (miles)	Number of Wells	Population
0 - 1/4	0	0
1/4 - 1/2	0	0
1/2 - 1	2	5 (a)
1 - 2	23	56 (a)
2 - 3	33	80 (a)
3 - 4	30	1,068 (b)

(a) private wells
(b) 28 private wells and 2 municipal wells

Both the Springfield Plateau and Ozark Aquifers were scored using the PREscore methodology. Previous groundwater sampling conducted in the area of the site indicated that groundwater contamination exists; therefore, a likelihood of release score of 550 was assigned to both aquifers. The targets for the Springfield Plateau Aquifer were scored as follows: two private residential wells which were sampled contained Level I contamination, and one private residential well contained Level II contamination; therefore, a primary population score of 50 was assigned based upon the seven people estimated to receive drinking water from these three contaminated wells. A Level I target population score of 40 was assigned because four people drink from wells containing Level I contamination, and a Level II target population score of two was assigned because two people drink from a well containing Level II contamination (References 4 and 16). A secondary target population score of 6 was assigned based upon the populations receiving drinking water from uncontaminated wells completed in the Springfield Plateau Aquifer. Springfield is located in a state-designated wellhead protection area (WHPA); therefore, a WHPA score of 20 was assigned (Reference 19). Well logs of Springfield indicate that groundwater is used for commercial food preparation; therefore, a resources score of 5 was assigned. The total targets score for the Springfield Plateau Aquifer was 123, and the groundwater pathway score for the Springfield Plateau Aquifer was 82.

The wells in the Ozark Aquifer were scored potential contamination targets. No wells completed in this aquifer are known to be contaminated; therefore, Level I and Level II target scores of 0 were assigned. A potential population score of 14 was assigned based upon the number of people estimated to receive water from wells completed in the Ozark Aquifer. A nearest well score of 5 was assigned because the nearest well drawing from the Ozark Aquifer is slightly further than one mile from the site. A WHPA score of 20 and a resources score of 5 were also assigned to the Ozark Aquifer. The total target score was 44, and the groundwater pathway score for the Ozark Aquifer was 29.33. The overall groundwater pathway score was calculated by combining the highest targets for each aquifer, resulting in an overall groundwater pathway targets score of 137. The overall groundwater pathway score was 91.33

3.3 Surface Water Pathway

Numerous surface water samples have been collected from standing water in pits, ponds, and lagoons on-site, as well as from nearby surface water bodies. The sample results indicate that standing water on-site is contaminated and some of the nearby surface water bodies contained similar contaminants; however, given the distance from the site to the nearest surface water body, it is difficult to determine if off-site surface water contamination is attributable to the Litton site.

There is no overland flow pathway from the site to any perennial surface water bodies because precipitation falling in the area of the site enters sinkholes and percolates into the ground before reaching surface water. In addition, surface water is located further than two miles from the site; therefore, the overland flow segment of the surface water pathway cannot be scored. There is a groundwater to surface water pathway because precipitation enters sinkholes and is funneled to spring outlets approximately three miles north of the site.

However, the groundwater to surface water segment of the surface water pathway cannot be scored either because the nearest surface water body is located further than one mile from the site.

3.4 Soil Exposure Pathway

No residences, schools, or day care centers are known to be located within 200 feet of the site (References 2 [illegible]). The nearest resident is located approximately 1,500 feet south of the site (Reference 2). [illegible] radius of the site is approximately 126 (References 2 and 16). The Black-tailed [illegible] state endangered species, is located in the area of the site (Reference 21).

[illegible] was assigned for the resident population threat portion of the soil exposure [illegible] detected in the site soils at concentration greater than three times [illegible]. The resident population and resident individual targets [illegible] schools, or day care centers are present within 200 feet of the [illegible] was assigned based on the number of workers estimated [illegible] sensitive environments target score of 0 was assigned because [illegible]. A resources score of 0 was assigned because no [illegible] resident population threat targets was [illegible] exposure score of 25 was assigned for the [illegible] of the site to the public. A nearby [illegible] residing within one mile of the site. [illegible] exposure pathway score was 3.37

[illegible] contaminants into the air is not [illegible] Exposure Modeling System (GEMS) database [illegible] were utilized to estimate the populations [illegible] The following populations reside within the

[illegible] Population

[illegible]

The primary data gap associated with the site is the lack of definitive data regarding the number and size of the surface impoundments located on-site. However, sufficient information was available to adequately calculate a waste characteristics score. Extensive groundwater, surface water, and soil sampling has been conducted. Observed releases to the groundwater and soil exposure pathways have been established; therefore, no further groundwater or soil sampling is anticipated to be necessary. An observed release to the surface water pathway could not be established because of the complex groundwater to surface water system in the area of the site. Additional surface water sampling is not expected to increase the site score because the nearest surface water body is greater than two miles from the site. Additionally, it will be difficult to determine if off-site surface water contamination is attributable to the Litton site because several industrial facilities are located in the area. Air sampling has not been conducted; however, it is not anticipated to be necessary because the source types are unlikely to contribute to air contamination.

6.0 CONCLUSIONS

Although the waste characteristics score was greater than 28.5, it is anticipated that additional site characterization activities conducted at the site may not significantly alter the results because the Litton site has already been extensively investigated. Currently, sufficient data is sufficient to complete a National Priorities List (NPL) HRS scoring package for the site. Investigative activities conducted at the site indicate that on-site soils and groundwater have become contaminated as a result of past and present disposal activities at the facility. Since the nearest surface water body is three miles from the site and several industrial facilities are located in the area, it will be difficult to determine if off-site surface water contamination is attributable to the site, even if additional surface water samples are collected. Although air samples were not collected at the site, air contamination is not expected to result from the site because of the nature of the waste. Litton Systems, Inc., Advanced Circuitry Division site has recently entered into a Consent Agreement with MDNR, which requires Litton to remediate the site to cleanup levels specified by MDNR.

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15. Missouri Department of Natural Resources, well logs of Greene County, Missouri.

16. Conway, Lisa, Data Specialist, U.S. Bureau of the Census, August 27, 1993, telephone conversation with Carolyn McManigal, Jacobs Engineering Group Inc.

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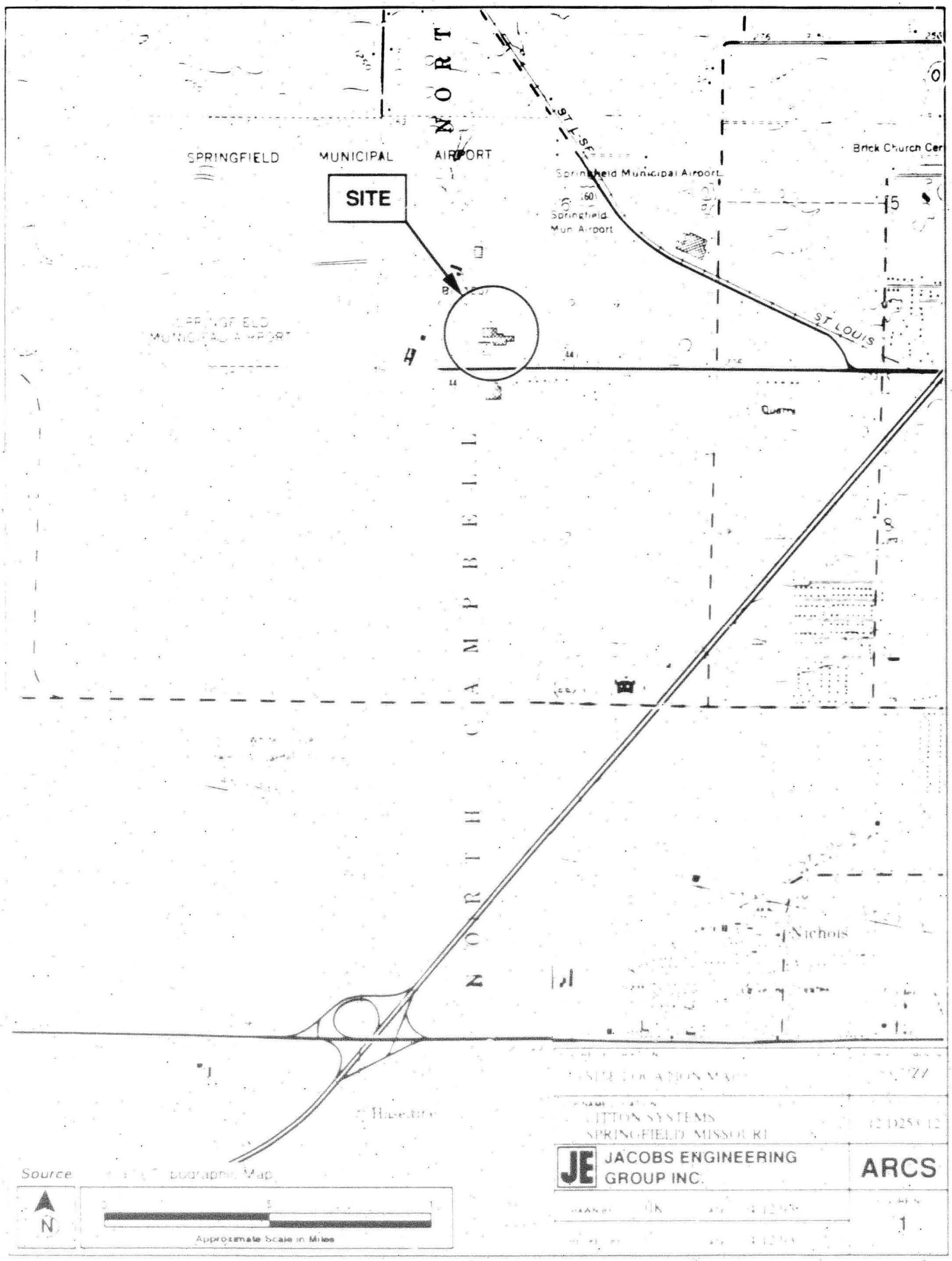
21. Dickneite, Dan, Planning Division Chief, Missouri Department of Conservation, April 12, 1993, letter to Traci Phillips, Jacobs Engineering Group Inc.

APPENDICES

FIGURES


SPRINGFIELD MUNICIPAL AIRPORT
SITE
Springfield Municipal Airport
Springfield Mun Airport
ST LOUIS
Brick Church Cem
NORTH CAMPBELL
Nichols
Source
Approximate Scale in Miles
CUTTON SYSTEMS
SPRINGFIELD, MISSOURI
JACOBS ENGINEERING GROUP INC.
ARCS
1

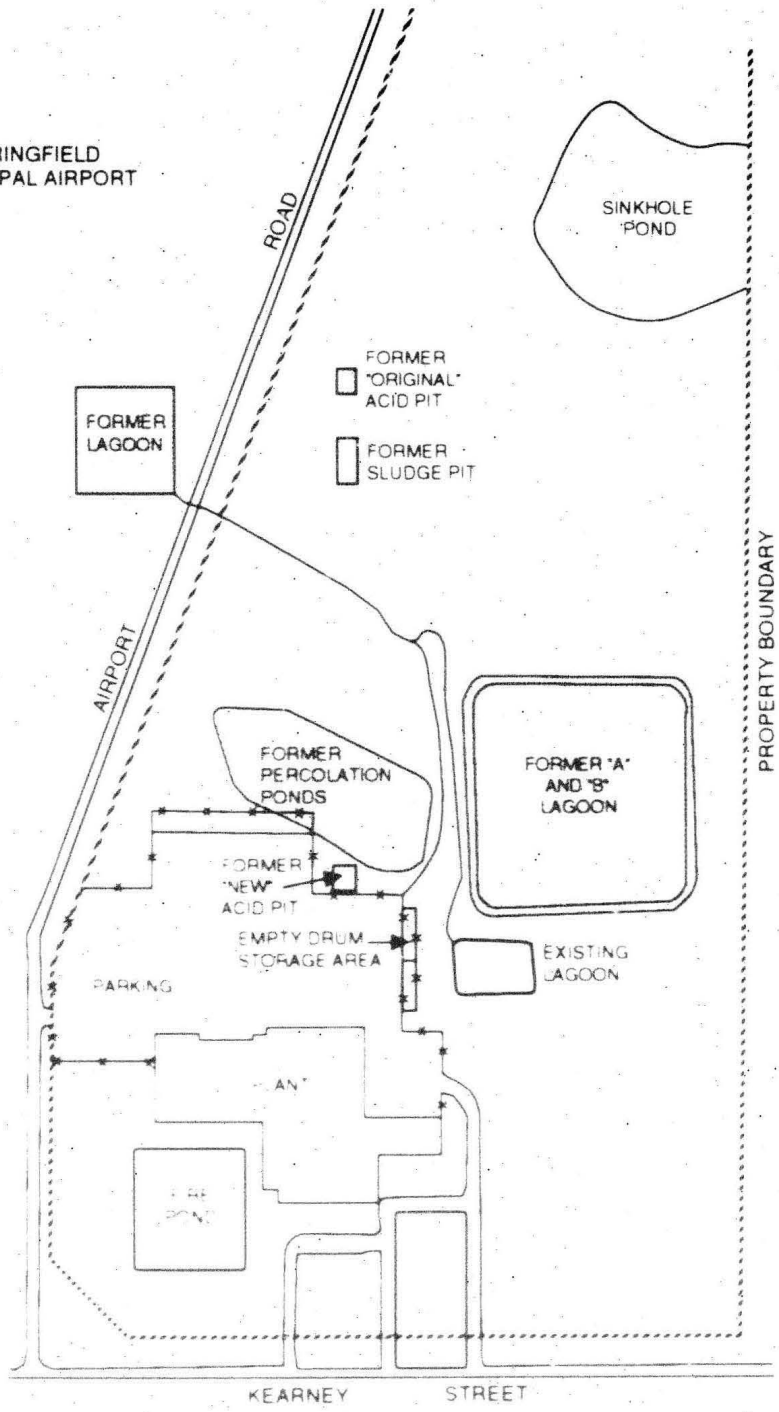


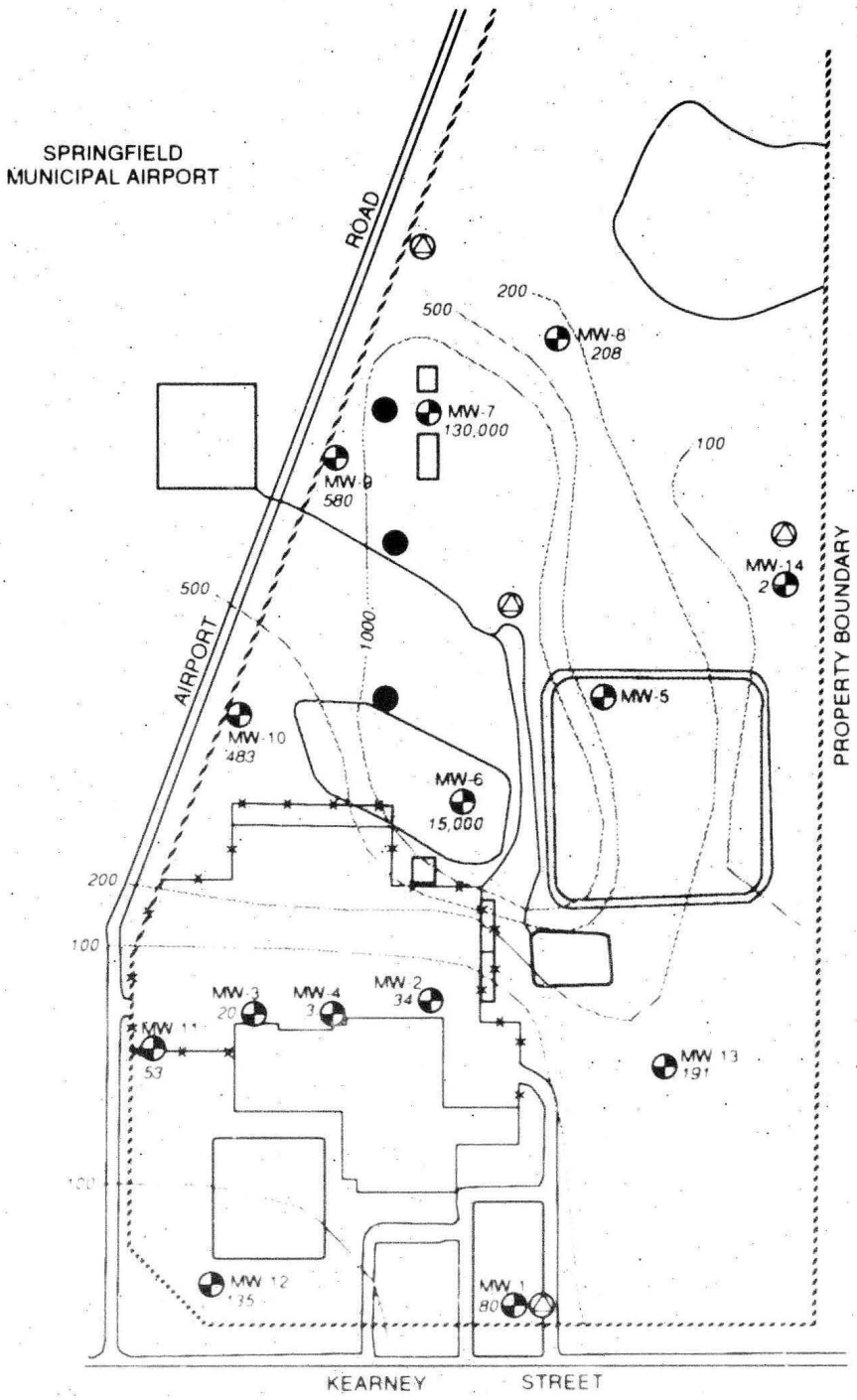
FIGURE DESCRIPTION: SITE MAP	SK7777
SITE NAME/LOCATION: LITTON SYSTEMS SPRINGFIELD, MISSOURI	12-D253-12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD DATE: 03/23/93	FIGURE NO.: 2
CHECKED BY: KS DATE: 03/23/93	

N

0 100

Approximate Scale in Feet

SOURCE: SCS ENGINEERS



LEGEND

100 TCE ISOCHEMICAL CONTOUR IN µg/l

MW-1 580 MONITOR WELL LOCATION NUMBER AND TCE CONCENTRATION

PROPOSED RECOVERY WELL

PROPOSED DEEP WELL

N

0 100

Approximate Scale in Feet

SOURCE SCS ENGINEERS

FIGURE DESCRIPTION: PROPOSED RECOVERY AND DEEP MONITORING WELL LOCATIONS	[illegible] 53.7117
SITE NAME LOCATION: LITTON SYSTEMS SPRINGFIELD, MISSOURI	12 1D253 12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY MD DATE 03/23/93	FIGURE NO. 3
CHECKED BY KS DATE 03/23/93	

1253 12.001

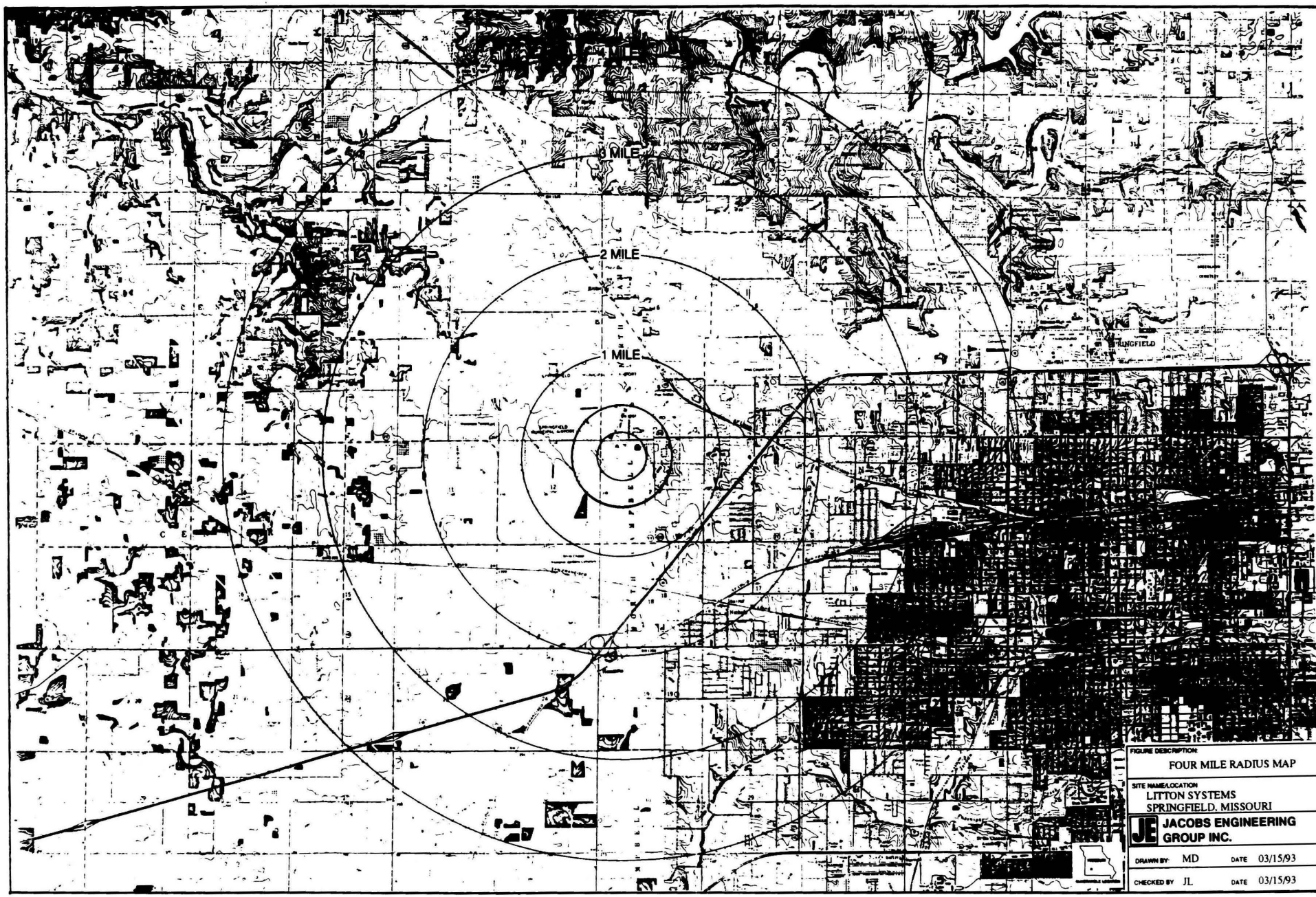


FIGURE DESCRIPTION: FOUR MILE RADIUS MAP	WORK ASSIGNMENT NO: 53-7JZZ
SITE NAME/LOCATION: LITTON SYSTEMS SPRINGFIELD, MISSOURI	JACOBS PROJECT NO: 12-D253-12
JACOBS ENGINEERING GROUP INC.	ARCS
DRAWN BY: MD DATE: 03/15/93	FIGURE NO: 4
CHECKED BY: JL DATE: 03/15/93	

TABLES

TABLE 1
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR
March 24, 1981

	Sample Numbers					
Contaminant	**81-9619**	**81-9620**	**81-9621**	**81-9622**	**81-9623**	**81-9624**
Vinyl chloride	132	340	ND	ND	ND	ND
1,1-Dichloroethylene	8.1	11	ND	ND	ND	ND
1,1-Dichloroethane	176	181	ND	ND	ND	ND
trans-1,2-Dichloroethylene	335	250	ND	ND	ND	17
1,1,1-Trichloroethane	63	58	78	ND	ND	ND
1,2-Dichloropropane	79	54	80	236	392	2.4
Trichloroethylene	17	42	29	17	72	131
Methylene chloride	ND	ND	325	1,008	1,010	174
1,1,2 Trichloro-1,1,2-trifluoroethane	ND	ND	D	D	ND	ND
Chloromethane	ND	ND	ND	9.6	ND	ND

NOTE All concentrations reported in µg/l.
ND The material was analyzed for, but was not detected.
D Compound was qualitatively identified; however, the quantitative value is less than the sample quantitation limit.

TABLE 2
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater and Surface Water Samples Collected by MDNR
May 20, 1981

	Sample Numbers								
Contaminant	81-6230	81-6231	81-6232	81-6233	81-6234	81-6235	81-6236	81-6237	81-6238
Trichloroethylene	200	7	4.9	20.8	233	ND	ND	106	30
1,2-Dichloropropane	11.4	ND	ND	ND	ND	4.1	4.3	119	105
1,1,1-Trichloroethane	12.6	ND	ND	3.7	ND	ND	3.2	67.9	47.2
trans-1,2-Dichloroethylene	27.8	ND	ND	ND	27.5	ND	ND	260	256
Chloroform	ND	ND	ND	ND	ND	ND	4.2	ND	ND
Bromodichloromethane	ND	ND	4.4	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ND	ND	7.1	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	59.4	58.3
1,1-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	14.3	12.5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	112	132
1-Butene	ND	ND	ND	ND	ND	ND	15	ND	ND
Thiobismethane	ND	ND	ND	ND	ND	ND	45	ND	ND
2-Propane	ND	ND	ND	ND	ND	ND	75	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	35	ND	ND
Tetrahydrofuran	ND	ND	ND	ND	ND	ND	16	ND	ND
1-Butanol	ND	ND	ND	ND	ND	ND	300	ND	ND

NOTE: All concentrations reported in µg/l.
ND The material was analyzed for, but was not detected.

TABLE 3
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater, Surface Water, Sediment, and Surface Soil Samples Collected by MDNR
January 27, 1988

	Sample Numbers							
Contaminant	**88-0186 µg/L**	**88-0187 µg/kg**	**88-0196 µg/L**	**88-0198 µg/kg**	**88-0220 µg/kg**	**88-0221 µg/kg**	**88-0222 µg/L**	**88-0223 µg/L**
(T)Silver	ND	600	ND	1,000	400	200	ND	ND
(T)Arsenic	ND	11,000	ND	33,000	3,800	3,200	ND	ND
(T)Barium	87	150,000	51	210,000	180,000	150,000	63	ND
(T)Cadmium	ND	1,200	ND	400	400	400	ND	ND
(T)Chromium	ND	39,000	ND	390,000	31,000	12,000	ND	ND
(T)Copper	40	620,000	40	4,500,000	580,000	7,200	40	30
(T)Mercury	ND	220	ND	400	220	220	ND	ND
(T)Nickel	80	190,000	ND	61,000	37,000	21,000	ND	ND
(T)Lead	ND	ND	ND	290,000	41,000	25,000	ND	ND
(T)Selenium	ND	ND	ND	260	420	ND	ND	ND
(TEP)Copper	ND	90	ND	140	50	ND	ND	ND
(TEP)Nickel	ND	640	ND	70	60	30	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	1,500	ND	ND	ND	ND
Trichloroethylene	68	ND	ND	29,000	2,200	ND	44	ND
Methylene chloride	ND	ND	24	ND	ND	ND	ND	ND
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	7.7
1,2-Dichloroethylene	14	ND	ND	ND	ND	ND	ND	ND

T Total metals.
ND The material was analyzed for, but was not detected.
TEP Toxicity Extraction Procedure Metals.

TABLE 4
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Soil Samples Collected by SCS Engineers
January 1991

	Sample Numbers								
Contaminant	**B-B1-5.5**	**B-B1-10**	**B-B2-6**	**B-B3-5**	**B-B3-10**	**B-B3-15**	**B-B4-5**	**B-B4-7**	**B-B4-10**
Copper	10	12	830	5	6	9	47	9	25
Nickel	38	27	36	ND	12	11	13	ND	25
Zinc	50	56	61	20	29	39	24	20	50
1,2-Dichloropropane	14	ND	ND	ND	16	21	ND	B	ND
Trichloroethene	260	130	41	ND	11	13	ND	B	480
Ethanol	ND	ND	12	ND	73	200	ND	B	ND

NOTE: All copper, nickel, and zinc concentrations reported in mg/kg. All 1,2-dichloropropane, trichloroethene, and ethanol concentrations reported in µg/kg.
ND The material was analyzed for, but was not detected.
B The sample container broke before the analysis could be performed.

TABLE 5
Litton Systems, Inc., Advanced Circuitry Division
Springfield, Missouri
CERCLIS No. MOD007152903
Selected Sample Analysis Results of Groundwater Samples Collected by SCS Engineers
January 1991

	Sample Numbers													
Contaminant	**MW1**	**MW2**	**MW3**	**MW4**	**MW5**	**MW6**	**MW7**	**MW8**	**MW9**	**MW10**	**MW11**	**MW12**	**MW13**	**MW14**
Copper	ND	ND	691	7.8	0.2	0.4	5.4	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.6	ND	0.5	0.5	0.8	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	5.4	ND	ND	0.1	0.1	ND	ND	ND	ND	ND	ND	ND
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND
1,2-Dichloropropane	23	22	15	9	135	1,500	ND	ND	ND	172	40	50	50	ND
Trichloroethylene	80	34	20	3	490	15,000	130,000	208	580	483	53	135	191	2
Chloroform	ND	10	ND	ND	ND	8	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	70	ND	ND	15	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	ND	ND	5,000	ND	ND	90	73,000	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	20	ND	400	12,000	1,000	76	197	53	14	ND	17	ND
1,1-Dichloroethane	ND	ND	ND	ND	60	32	910	ND	12	ND	28	ND	17	ND
1,1-Dichloroethylene	ND	ND	ND	ND	134	1,200	29,300	ND	250	ND	10	ND	ND	ND
Tetrachloroethylene	ND	ND	ND	ND	ND	10	2,500	5	7	18	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	43	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	30	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	480	ND	ND	ND	ND	ND	ND	ND

NOTE: All copper, nickel, zinc, and cyanide concentrations reported in mg/l. All other contaminant concentrations reported in μg/l.
ND The material was analyzed for, but was not detected.

APPENDIX A

PREscore Scoresheets

HRS DOCUMENTATION RECORD

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

1. Site Name: Litton Systems, Inc., Advanced Circuitry Division
   (as entered in CERCLIS)

2. Site CERCLIS Number: MOD007152903

3. Site Reviewer: Carolyn McManigal

4. Date: September 1, 1993

5. Site Location: Springfield, Greene, Missouri
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Multip.e

   Latitude: 37°14'43.5" Longitude: 93°22'33.0"

	Score
Ground Water Migration Pathway Score (Sgw)	91.33
Surface Water Migration Pathway Score (Ssw)	0.00
Soil Exposure Pathway Score (Ss)	3.37
Air Migration Pathway Score (Sa)	5.28

Site Score	45.77

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

WASTE QUANTITY
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Pond A

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID		Pond A	
b. Source Type		Surface Impoundment	
c. Secondary Source Type		N.A.	
d. Source Volume (yd3)	Source Area (ft2)	71250.00	202500.00
e. Source Volume/Area Value		2.85E+04	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)		0.00E+00	
g. Data Complete?		NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)		0.00E+00	
i. Data Complete?		NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)		2.85E+04	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Acetone	< 2	YES	7.5E-02	ppm
Arsenic	< 2	NO	1.8E-02	ppm
Barium	< 2	NO	1.0E+01	ppm
Carbon disulfide	< 2	YES	3.5E-02	ppm
Chloroform	< 2	YES	4.2E-03	ppm
Chromium	< 2	NO	6.5E-01	ppm
Chromium(III)	< 2	NO	4.0E+03	ppm
Chromium(VI)	< 2	NO	2.0E+00	ppm
Copper	< 2	NO	3.7E+04	ppm
Dichloropropane, 1,2-	< 2	YES	8.0E-02	ppm
Lead	< 2	NO	1.2E+03	ppm
Methylene chloride	< 2	YES	3.3E-01	ppm
Nickel	< 2	NO	1.9E+03	ppm
Selenium	< 2	NO	2.0E-02	ppm
Tetrahydrofuran	< 2	YES	1.6E-01	ppm
Trichloroethane, 1,1,1-	< 2	YES	3.2E+03	ppm
Trichloroethylene	< 2	YES	2.9E-02	ppm
Zinc	< 2	NO	4.3E+01	ppm

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Irrigation Plot

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID		Irrigation Plot	
b. Source Type		Land Treatment	
c. Secondary Source Type		N.A.	
d. Source Volume (yd3)	Source Area (ft2)	0.00	87120.00
e. Source Volume/Area Value		3.23E+02	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)		0.00E+00	
g. Data Complete?		NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)		0.00E+00	
i. Data Complete?		NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)		3.23E+02	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	< 2	NO	3.3E+01	ppm
Barium	< 2	NO	2.1E+02	ppm
Cadmium	< 2	NO	4.0E-01	ppm
Chromium	< 2	NO	3.9E+02	ppm
Copper	< 2	NO	4.5E+03	ppm
Lead	< 2	NO	2.9E+02	ppm
Mercury	< 2	NO	4.0E-01	ppm
Nickel	< 2	NO	6.1E+01	ppm
Selenium	< 2	NO	4.2E-01	ppm
Silver	< 2	NO	1.0E+00	ppm
Trichloroethylene	< 2	NO	2.9E+01	ppm

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Pond A	GW-SE-A	2.85E+04	0.00E+00	2.85E+04
2	Irrigation Plot	GW-SE-A	3.23E+02	0.00E+00	3.23E+02

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values		HWQVs*	WCVs**
Ground Water	Toxicity/Mobility	1.00E+04	10000	100
SW: Overland Flow, DW	Tox./Persistence	0.00E+00	0	0
SW: Overland Flow, HFC	Tox./Persis./Bioacc.	0.00E+00	0	0
SW: Overland Flow, Env	Etox./Persis./Bioacc.	0.00E+00	0	0
SW: GW to SW, DW	Tox./Persistence	1.00E+04	10000	100
SW: GW to SW, HFC	Tox./Persis./Bioacc.	5.00E+07	10000	560
SW: GW to SW, Env	Etox./Persis./Bioacc.	5.00E+06	10000	320
Soil Exposure:Resident	Toxicity	1.00E+04	10000	100
Soil Exposure: Nearby	Toxicity	1.00E+04	10000	100
Air	Toxicity/Mobility	2.00E+03	10000	56

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

NPL Characteristics Data Collection Form
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Record Information

1. Site Name: Litton Systems, Inc., Advanced Circuitry Division
   (as entered in CERCLIS)

2. Site CERCLIS Number: MOD007152903

3. Site Reviewer: Carolyn McManigal

4. Date: September 1, 1993

5. Site Location: Springfield, Greene, Missouri
   (City/County,State)

6. Congressional District:

7. Site Coordinates: Multiple

   Latitude: 37°14'43.5" Longitude: 93°22'33.0"

Site Description

1. Setting: Suburban

2. Current Owner: Private - Industrial

3. Current Site Status: Active

4. Years of Operation: Active Site , from and to dates: 1963 - 1993

5. How Initially Identified: State/Local Program

6. Entity Responsible for Waste Generation:

   - Manufacturing
     - Metal Coating

7. Site Activities/Waste Deposition:

   - Surface Impoundment
   - Discharge to Sewer/Surface Water

Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals
- Metals
- Lead

Response Actions

9. Response/Removal Actions:

- Other Removal Action Has Occurred

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Not Applicable

Demographic Information

11. Workers Present Onsite: Yes

12. Distance to Nearest Non-Worker Individual: > 1/4 - 1/2 Mile

13. Residential Population Within 1 Mile: 0.0

14. Residential Population Within 4 Miles: 0.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 0.0

17. Drinking Water Supply System Type for Local Drinking Water Supply Sources:

- Municipal (Services over 25 People)
- Private

18. Surface Water Adjacent to/Draining Site:

- River

GROUND WATER MIGRATION PATHWAY SCORESHEET

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Ozark		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	3
2c. Depth to Aquifer	5	3
2d. Travel Time	35	25
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	310
3. Likelihood of Release	550	550
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+04
5. Hazardous Waste Quantity	*	10000
6. Waste Characteristics	100	100
Targets		
7. Nearest Well	50	5.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.40E+01
8d. Population (lines 8a+8b+8c)	**	1.40E+01
9. Resources	5	5.00E+00
10. Wellhead Protection Area	20	2.00E+01
11. Targets (lines 7+8d+9+10)	**	4.40E+01
12. Targets (including overlaying aquifers)	**	1.37E+02
13. Aquifer Score	100	91.33
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	91.33

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

GROUND WATER PATHWAY AQUIFER SUMMARY

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

No.	Aquifer ID	Type	Overlaying No.	Inter-Connected with	Likelihood of Release	Targets
1	Springfield Plateau	Karst	0	0	550	1.23E+02
2	Ozark	Non K	1	1	550	1.37E+02

Containment

No.	Source ID	HWQ Value	Containment Value
1	Pond A	2.85E+04	10
2	Irrigation Plot	3.23E+02	10
	Containment Factor		10

Net Precipitation

Net Precipitation (inches)	0.00

GROUND WATER PATHWAY LIKELIHOOD OF RELEASE Springfield Plateau AQUIFER
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Aquifer: Springfield Plateau

Type of Aquifer: Karst

Overlaying Aquifer: 0

Interconnected with: 0

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination
1	McCrosky Well	Drinking Water	2.500	Level I
2	LeFors Well	Drinking Water	2.500	Level I
3	Garner Well	Drinking Water	2.500	Level II

Well No.	Hazardous Substance	Concent.	MCL	Cancer	RFD	Units
1	Barium	1.2E+02	1.0E+03	0.0E+00	2.5E+03	ppb
1	Chromium	7.0E+00	5.0E+01	0.0E+00	1.8E+02	ppb
1	Copper	4.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb
1	Trichloroethylene	4.4E+01	5.0E+00	3.2E+00	0.0E+00	ppb
2	Barium	6.2E+01	1.0E+03	0.0E+00	2.5E+03	ppb
2	Chromium	6.7E+00	5.0E+01	0.0E+00	1.8E+02	ppb
2	Copper	4.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb
2	Lead	6.1E+00	5.0E+01	0.0E+00	0.0E+00	ppb
2	Methylene chloride	2.4E+01	0.0E+00	4.7E+00	2.1E+03	ppb
3	Carbon disulfide	7.7E+00	0.0E+00	0.0E+00	3.5E+03	ppb
3	Chromium	8.3E+00	5.0E+01	0.0E+00	1.8E+02	ppb
3	Copper	3.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb

Observed Release Factor 550

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	250.00	feet
B. Depth to Aquifer from Surface	0.00	feet
C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	

Travel Time

Are All Layers Karst?	YES	
Thickness of Layer(s) with Lowest Conductivity	0.00	feet
Hydraulic Conductivity (cm/sec)	1.0E-02	
Travel Time Factor	35	

Potential to Release Factor	430

GROUND WATER PATHWAY LIKELIHOOD OF RELEASE Ozark AQUIFER

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Aquifer: Ozark

Type of Aquifer: Non Karst

Overlaying Aquifer: 1

Interconnected with: 1

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor 0

POTENTIAL TO RELEASE

Containment

Containment Factor	10	

Net Precipitation

Net Precipitation Factor	3	

Depth to Aquifer

A. Depth of Hazardous Substances	250.00	feet
B. Depth to Aquifer from Surface	330.00	feet
C. Depth to Aquifer (B - A)	80.00	feet
Depth to Aquifer Factor	3	

Travel Time

Are All Layers Karst?	NO	
Thickness of Layer(s) with Lowest Conductivity	30.00	feet
Hydraulic Conductivity (cm/sec)	1.0E-04	
Travel Time Factor	25	

Potential to Release Factor	310

Source: 1 Pond A

Source Hazardous Waste Quantity Value: 28500.00

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Acetone	10	1.00E+00	1.00E+01
Arsenic	10000	1.00E-02	1.00E+02
Barium	10000	1.00E-02	1.00E+02
Carbon disulfide	1000	1.00E-02	1.00E+01
Chloroform	100	1.00E+00	1.00E+02
Chromium	10000	1.00E-02	1.00E+02
Chromium(III)	10000	1.00E-02	1.00E+02
Chromium(VI)	10000	1.00E-02	1.00E+02
Copper	100	1.00E-02	1.00E+00
Dichloropropane, 1,2-	100	1.00E+00	1.00E+02
Lead	10000	2.00E-05	2.00E-01
Methylene chloride	10	1.00E+00	1.00E+01
Nickel	10000	2.00E-05	2.00E-01
Selenium	1000	1.00E-02	1.00E+01
Tetrahydrofuran	1	1.00E+00	1.00E+00
Trichloroethane, 1,1,1-	10	1.00E-02	1.00E-01
Trichloroethylene	10	1.00E-02	1.00E-01
Zinc	10	2.00E-03	2.00E-02

Source: 2 Irrigation Plot

Source Hazardous Waste Quantity Value: 322.67

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
Arsenic	10000	1.00E-02	1.00E+02
Barium	10000	1.00E-02	1.00E+02
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E-02	1.00E+02
Copper	100	1.00E-02	1.00E+00
Lead	10000	2.00E-05	2.00E-01
Mercury	10000	2.00E-05	2.00E-01
Nickel	10000	2.00E-05	2.00E-01
Selenium	1000	1.00E-02	1.00E+01
Silver	1000	2.00E-07	2.00E-04
Trichloroethylene	10	1.00E-02	1.00E-01

Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value

- N/A and/or data not specified

Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+04
Toxicity/Mobility Value from Observed Release Hazardous Substances:	1.00E+04
Toxicity/Mobility Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	2.88E+04
Hazardous Waste Quantity Factor:	10000
Waste Characteristics Factor Category:	100

Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population
1	McCrosky Well	Drinking Water	2.500	Level I	2.00
2	Lefors Well	Drinking Water	2.500	Level I	2.00
3	Garner Well	Drinking Water	2.500	Level II	2.00

Well No.	Hazardous Substance	Concent.	MCL	Cancer	RFD	Units
1	Barium	1.2E+02	1.0E+03	0.0E+00	2.5E+03	ppb
1	Chromium	7.0E+00	5.0E+01	0.0E+00	1.8E+02	ppb
1	Copper	4.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb
1	Trichloroethylene	4.4E+01	5.0E+00	3.2E+00	0.0E+00	ppb
2	Barium	6.2E+01	1.0E+03	0.0E+00	2.5E+03	ppb
2	Chromium	6.7E+00	5.0E+01	0.0E+00	1.8E+02	ppb
2	Copper	4.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb
2	Lead	6.1E+00	5.0E+01	0.0E+00	0.0E+00	ppb
2	Methylene chloride	2.4E+01	0.0E+00	4.7E+00	2.1E+03	ppb
3	Carbon disulfide	7.7E+00	0.0E+00	0.0E+00	3.5E+03	ppb
3	Chromium	8.3E+00	5.0E+01	0.0E+00	1.8E+02	ppb
3	Copper	3.0E+01	0.0E+00	0.0E+00	1.3E+03	ppb

Level I Population Factor: 40.00

Level II Population Factor: 2.00

GROUND WATER PATHWAY TARGETS FOR AQUIFER Springfield Plateau
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	5.0	2.00E-01
> 1 to 2	36.0	2.60E+00
> 2 to 3	36.0	2.60E+00
> 3 to 4	27.0	9.00E-01

Potential Contamination Factor: 6.000

Nearest Well

Well: 1 McCrosky Well
Level of Contamination: Level I
Distance in miles: 2.50

Nearest Well Factor: 5.00E+01

Resources

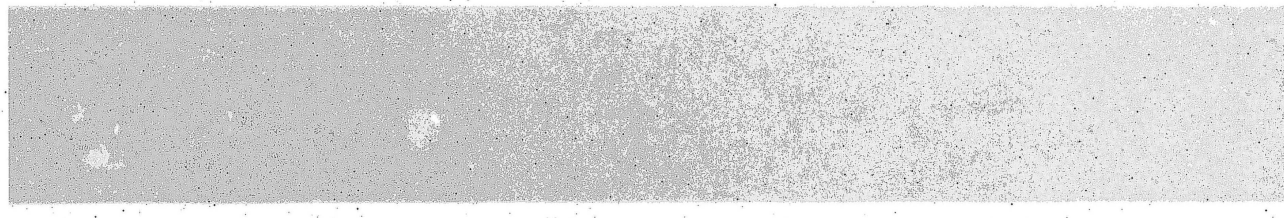
Resource Use: YES

Resource Factor: 5.00E+00

Wellhead Protection Area

Source with containment value >0, lies within or above the protection area

Wellhead Protection Area Factor: 2.00E+01



Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination Population

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	0.0	0.00E+00
> 1/4 to 1/2	0.0	0.00E+00
> 1/2 to 1	0.0	0.00E+00
> 1 to 2	19.0	3.00E-01
> 2 to 3	36.0	7.00E-01
> 3 to 4	1046.0	1.31E+01

Potential Contamination Factor: 14.000

Nearest Well

Level of Contamination: Potential
Distance in miles: 1.10

Nearest Well Factor: 5.00E+00

Resources

Resource Use: YES

Resource Factor: 5.00E+00

Wellhead Protection Area

Source with containment value >0, lies within or above the protection area

Wellhead Protection Area Factor: 2.00E+01

SOIL EXPOSURE PATHWAY SCORESHEET

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	550
Waste Characteristics		
2. Toxicity	*	1.00E+04
3. Hazardous Waste Quantity	*	10000
4. Waste Characteristics	100	100
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	5.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	0.00E+00
10. Targets (lines 5+6c+7+8+9)	**	5.00E+00
11. RESIDENT POPULATION THREAT SCORE	**	2.75E+05

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	1.00E+01
13. Area of Contamination	100	6.00E+01
14. Likelihood of Exposure	500	2.50E+01
Waste Characteristics		
15. Toxicity	*	1.00E+04
16. Hazardous Waste Quantity	*	10000
17. Waste Characteristics	100	100
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mi	**	9.00E-02
20. Targets (lines 18+19)	**	1.09E+00
21. NEARBY POPULATION THREAT SCORE	**	2.72E+03
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	3.37

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT LIKELIHOOD OF EXPOSURE
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Likelihood of Exposure

No.	Source ID	Level of Contamination
1	Pond A	Level I
2	Irrigation Plot	Level I

Likelihood of Exposure Factor: 550

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Acetone	< 2	7.5E-02	0.0E+00	5.8E+04	ppm
1	Arsenic	< 2	1.8E-02	3.2E-01	5.8E+02	ppm
1	Barium	< 2	1.0E+01	0.0E+00	4.1E+04	ppm
1	Carbon disulfide	< 2	3.5E-02	0.0E+00	5.8E+04	ppm
1	Chloroform	< 2	4.2E-03	9.6E+01	5.8E+03	ppm
1	Chromium	< 2	6.5E-01	0.0E+00	2.9E+03	ppm
1	Chromium(III)	< 2	4.0E+03	0.0E+00	5.8E+05	ppm
1	Chromium(VI)	< 2	2.0E+00	0.0E+00	2.9E+03	ppm
1	Copper	< 2	3.7E+04	0.0E+00	2.2E+04	ppm
1	Dichloropropane, 1,2-	< 2	8.0E-02	8.6E+00	0.0E+00	ppm
1	Lead	< 2	1.2E+03	0.0E+00	0.0E+00	ppm
1	Methylene chloride	< 2	3.3E-01	7.8E+01	3.5E+04	ppm
1	Nickel	< 2	1.9E+03	0.0E+00	1.2E+04	ppm
1	Selenium	< 2	2.0E-02	0.0E+00	1.7E+03	ppm
1	Tetrahydrofuran	< 2	1.6E-01	0.0E+00	0.0E+00	ppm
1	Trichloroethane, 1,1,1-	< 2	3.2E+03	0.0E+00	5.2E+04	ppm
1	Trichloroethylene	< 2	2.9E-02	5.3E+01	0.0E+00	ppm
1	Zinc	< 2	4.3E+01	0.0E+00	1.2E+05	ppm
2	Arsenic	< 2	3.3E+01	3.2E-01	5.8E+02	ppm
2	Barium	< 2	2.1E+02	0.0E+00	4.1E+04	ppm
2	Cadmium	< 2	4.0E-01	0.0E+00	2.9E+02	ppm
2	Chromium	< 2	3.9E+02	0.0E+00	2.9E+03	ppm
2	Copper	< 2	4.5E+03	0.0E+00	2.2E+04	ppm
2	Lead	< 2	2.9E+02	0.0E+00	0.0E+00	ppm
2	Mercury	< 2	4.0E-01	0.0E+00	1.7E+02	ppm
2	Nickel	< 2	6.1E+01	0.0E+00	1.2E+04	ppm
2	Selenium	< 2	4.2E-01	0.0E+00	1.7E+03	ppm
2	Silver	< 2	1.0E+00	0.0E+00	1.7E+03	ppm
2	Trichloroethylene	< 2	2.9E+01	5.3E+01	0.0E+00	ppm

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 1 Pond A

Source Hazardous Waste Quantity Value: 15576.92

Hazardous Substance	Toxicity Value
Acetone	10
Arsenic	10000
Barium	10000
Carbon disulfide	1000
Chloroform	100
Chromium	10000
Chromium(III)	10000
Chromium(VI)	10000
Copper	100
Dichloropropane, 1,2-	100
Lead	10000
Methylene chloride	10
Nickel	10000
Selenium	1000
Tetrahydrofuran	1
Trichloroethane, 1,1,1-	10
Trichloroethylene	10
Zinc	10

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 2 Irrigation Plot

Source Hazardous Waste Quantity Value: 322.67

Hazardous Substance	Toxicity Value
Arsenic	10000
Barium	10000
Cadmium	10000
Chromium	10000
Copper	100
Lead	10000
Mercury	10000
Nickel	10000
Selenium	1000
Silver	1000
Trichloroethylene	10

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	1.59E+04
Hazardous Waste Quantity Factor:	10000
Waste Characteristics Factor Category:	100

Targets

Level I Population:	0.0	Value:	0.00
Level II Population:	0.0	Value:	0.00
Workers:	10.0	Value:	5.00
Resident Individual:	Potentia	Value:	0.00
Resources:	NO	Value:	0.00

Terrestial Sensitive Environment	Value
- N/A and/or data not specified	

Terrestrial Sensitive Environments Factor: 0.00

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
1	Pond A	Level I	10	202500
2	Irrigation Plot	Level I	5	87120

Highest Attractiveness/Accessibility Value: 10
Sum of Eligible Areas Of Contamination (sq. feet): 289620
Area of Contamination Value: 60

Likelihood of Exposure Factor Category: 25

Source No.	Hazardous Substance	Depth (ft.)	Concent.	Cancer	RFD	Units
1	Acetone	< 2	7.5E-02	0.0E+00	5.8E+04	ppm
1	Arsenic	< 2	1.8E-02	3.2E-01	5.8E+02	ppm
1	Barium	< 2	1.0E+01	0.0E+00	4.1E+04	ppm
1	Carbon disulfide	< 2	3.5E-02	0.0E+00	5.8E+04	ppm
1	Chloroform	< 2	4.2E-03	9.6E+01	5.8E+03	ppm
1	Chromium	< 2	6.5E-01	0.0E+00	2.9E+03	ppm
1	Chromium(III)	< 2	4.0E+03	0.0E+00	5.8E+05	ppm
1	Chromium(VI)	< 2	2.0E+00	0.0E+00	2.9E+03	ppm
1	Copper	< 2	3.7E+04	0.0E+00	2.2E+04	ppm
1	Dichloropropane, 1,2-	< 2	8.0E-02	8.6E+00	0.0E+00	ppm
1	Lead	< 2	1.2E+03	0.0E+00	0.0E+00	ppm
1	Methylene chloride	< 2	3.3E-01	7.8E+01	3.5E+04	ppm
1	Nickel	< 2	1.9E+03	0.0E+00	1.2E+04	ppm
1	Selenium	< 2	2.0E-02	0.0E+00	1.7E+03	ppm
1	Tetrahydrofuran	< 2	1.6E-01	0.0E+00	0.0E+00	ppm
1	Trichloroethane, 1,1,1-	< 2	3.2E+03	0.0E+00	5.2E+04	ppm
1	Trichloroethylene	< 2	2.9E-02	5.3E+01	0.0E+00	ppm
1	Zinc	< 2	4.3E+01	0.0E+00	1.2E+05	ppm
2	Arsenic	< 2	3.3E+01	3.2E-01	5.8E+02	ppm
2	Barium	< 2	2.1E+02	0.0E+00	4.1E+04	ppm
2	Cadmium	< 2	4.0E-01	0.0E+00	2.9E+02	ppm
2	Chromium	< 2	3.9E+02	0.0E+00	2.9E+03	ppm
2	Copper	< 2	4.5E+03	0.0E+00	2.2E+04	ppm
2	Lead	< 2	2.9E+02	0.0E+00	0.0E+00	ppm
2	Mercury	< 2	4.0E-01	0.0E+00	1.7E+02	ppm
2	Nickel	< 2	6.1E+01	0.0E+00	1.2E+04	ppm
2	Selenium	< 2	4.2E-01	0.0E+00	1.7E+03	ppm
2	Silver	< 2	1.0E+00	0.0E+00	1.7E+03	ppm
2	Trichloroethylene	< 2	2.9E+01	5.3E+01	0.0E+00	ppm

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 1 Pond A

Source Hazardous Waste Quantity Value: 15576.92

Hazardous Substance	Toxicity Value
Acetone	10
Arsenic	10000
Barium	10000
Carbon disulfide	1000
Chloroform	100
Chromium	10000
Chromium(III)	10000
Chromium(VI)	10000
Copper	100
Dichloropropane, 1,2-	100
Lead	10000
Methylene chloride	10
Nickel	10000
Selenium	1000
Tetrahydrofuran	1
Trichloroethane, 1,1,1-	10
Trichloroethylene	10
Zinc	10

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 2 Irrigation Plot

Source Hazardous Waste Quantity Value: 322.67

Hazardous Substance	Toxicity Value
Arsenic	10000
Barium	10000
Cadmium	10000
Chromium	10000
Copper	100
Lead	10000
Mercury	10000
Nickel	10000
Selenium	1000
Silver	1000
Trichloroethylene	10

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Toxicity Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	1.59E+04
Hazardous Waste Quantity Factor:	10000
Waste Characteristics Factor Category:	100

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT TARGETS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Nearby Individual

Population within 1/4 mile: 17.0

Nearby Individual Value: 1.0

Population Within 1 Mile

Travel Distance Category	Number of People	Value
> 0 to 1/4 mile	17.0	0.0
> 1/4 to 1/2 mile	22.0	0.0
> 1/2 to 1 mile	87.0	0.0

Population Within 1 Mile Factor: 0.1

AIR PATHWAY SCORESHEET

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	450
2b. Particulate Potential to Release	500	220
2c. Potential to Release	500	450
3. Likelihood of Release	550	450
Waste Characteristics		
4. Toxicity/Mobility	*	2.00E+03
5. Hazardous Waste Quantity	*	10000
6. Waste Characteristics	100	56
Targets		
7. Nearest Individual	50	7.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	5.00E+00
8d. Population (lines 8a+8b+8c)	**	5.00E+00
9. Resources	5	5.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	2.70E-01
10c. Sens. Environments(lines 10a+10b)	***	2.70E-01
11. Targets (lines 7+8d+9+10c)	**	1.73E+01
AIR MIGRATION PATHWAY SCORE (Sa)	100	5.28E+00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see MRS for details.

AIR PATHWAY LIKELIHOOD OF RELEASE

Litton Systems, Inc., Advanced Circuitry Division 09/07/93

OBSERVED RELEASE

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Observed Release Factor: 0

AIR PATHWAY LIKELIHOOD OF RELEASE

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
Pond A	Surface Impoundment	10	11	17	28	280
Irrigation Plot	Land Treatment	10	28	17	45	450

Gas Potential to Release Factor: 450

AIR PATHWAY LIKELIHOOD OF RELEASE

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: Pond A

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Acetone	17
Carbon disulfide	17
Chloroform	17
Dichloropropane, 1,2-	17
Methylene chloride	17
Tetrahydrofuran	17
Trichloroethane, 1,1,1-	17
Trichloroethylene	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 17.000

Gas Migration Potential Value From Table 6-7: 17

Source: Irrigation Plot

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Mercury	11
Trichloroethylene	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 14.000

Gas Migration Potential Value From Table 6-7: 17

AIR PATHWAY LIKELIHOOD OF RELEASE

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
Pond A	Surface Impoundment	10	22	0	22	220
Irrigation Plot	Land Treatment	10	22	0	22	220

Particulate Potential to Release Factor: 220

Source: Pond A

Particulate Hazardous Substance
Arsenic
Barium
Chromium
Chromium(III)
Chromium(VI)
Copper
Lead
Nickel
Selenium
Zinc

Source: Irrigation Plot

Particulate Hazardous Substance
Arsenic
Barium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver

AIR PATHWAY WASTE CHARACTERISTICS

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 1 Pond A

Source Hazardous Waste Quantity Value: 28500.00

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Acetone	10	1.00E+00	NA	1.00E+01
Arsenic	10000	NA	2.00E-05	2.00E-01
Barium	10000	NA	2.00E-05	2.00E-01
Carbon disulfide	1000	1.00E+00	NA	1.00E+03
Chloroform	100	1.00E+00	NA	1.00E+02
Chromium	10000	NA	2.00E-05	2.00E-01
Chromium(III)	10000	NA	2.00E-05	2.00E-01
Chromium(VI)	10000	NA	2.00E-05	2.00E-01
Copper	100	NA	2.00E-05	2.00E-03
Dichloropropane, 1,2-	100	1.00E+00	NA	1.00E+02
Lead	10000	NA	2.00E-05	2.00E-01
Methylene chloride	10	1.00E+00	NA	1.00E+01
Nickel	10000	NA	2.00E-05	2.00E-01
Selenium	1000	NA	2.00E-05	2.00E-02
Tetrahydrofuran	1	1.00E+00	NA	1.00E+00
Trichloroethane, 1,1,1-	10	1.00E+00	NA	1.00E+01
Trichloroethylene	10	1.00E+00	NA	1.00E+01
Zinc	10	NA	2.00E-05	2.00E-04

AIR PATHWAY WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Source: 2 Irrigation Plot

Source Hazardous Waste Quantity Value: 322.67

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Arsenic	10000	NA	2.00E-05	2.00E-01
Barium	10000	NA	2.00E-05	2.00E-01
Cadmium	10000	NA	2.00E-05	2.00E-01
Chromium	10000	NA	2.00E-05	2.00E-01
Copper	100	NA	2.00E-05	2.00E-03
Lead	10000	NA	2.00E-05	2.00E-01
Mercury	10000	2.00E-01	2.00E-05	2.00E+03
Nickel	10000	NA	2.00E-05	2.00E-01
Selenium	1000	NA	2.00E-05	2.00E-02
Silver	1000	NA	2.00E-05	2.00E-02
Trichloroethylene	10	1.00E+00	NA	1.00E+01

AIR PATHWAY WASTE CHARACTERISTICS
Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Hazardous Substances Found in an Observed Release

Sample ID	Observed Release Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value

- N/A and/or data not specified

AIR PATHWAY WASTE CHARACTERISTICS

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Toxicity/Mobility Value from Source Hazardous Substances:	2.00E+03
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	2.00E+03
Sum of Source Hazardous Waste Quantity Values:	2.88E+04
Hazardous Waste Quantity Factor:	10000
Waste Characteristics Factor Category:	56

AIR PATHWAY TARGETS

Litton Systems, Inc., Advanced Circuitry Division - 09/07/93

Actual Contamination

No.	Sample ID	Distance (miles)	Level of Contamination

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject to Potential Contamination	Population	Value
Onsite	0.0	0.0000
> 0 to 1/4 mile	17.0	0.4000
> 1/4 to 1/2 mile	22.0	0.0900
> 1/2 to 1 mile	87.0	0.0900
> 1 to 2 miles	1814.0	0.8000
> 2 to 3 miles	7003.0	1.2000
> 3 to 4 miles	15069.0	2.3000
	Potential Contaminantion Factor:	5.0000

Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: > 0 to 1

Nearest Individual Value: 7

Resources

Resource Use: YES

Resource Value: 5

Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value
- N/A and/or data not specified		

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value
- N/A and/or data not specified		

==========

Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10
Lepus californicus	0.500	50	0.0540	0.270
	0.000	0	1.0000	0.000
Sum of Sensitive Environments Weighted Values/10:				0.270

Potential Contamination, Wetlands

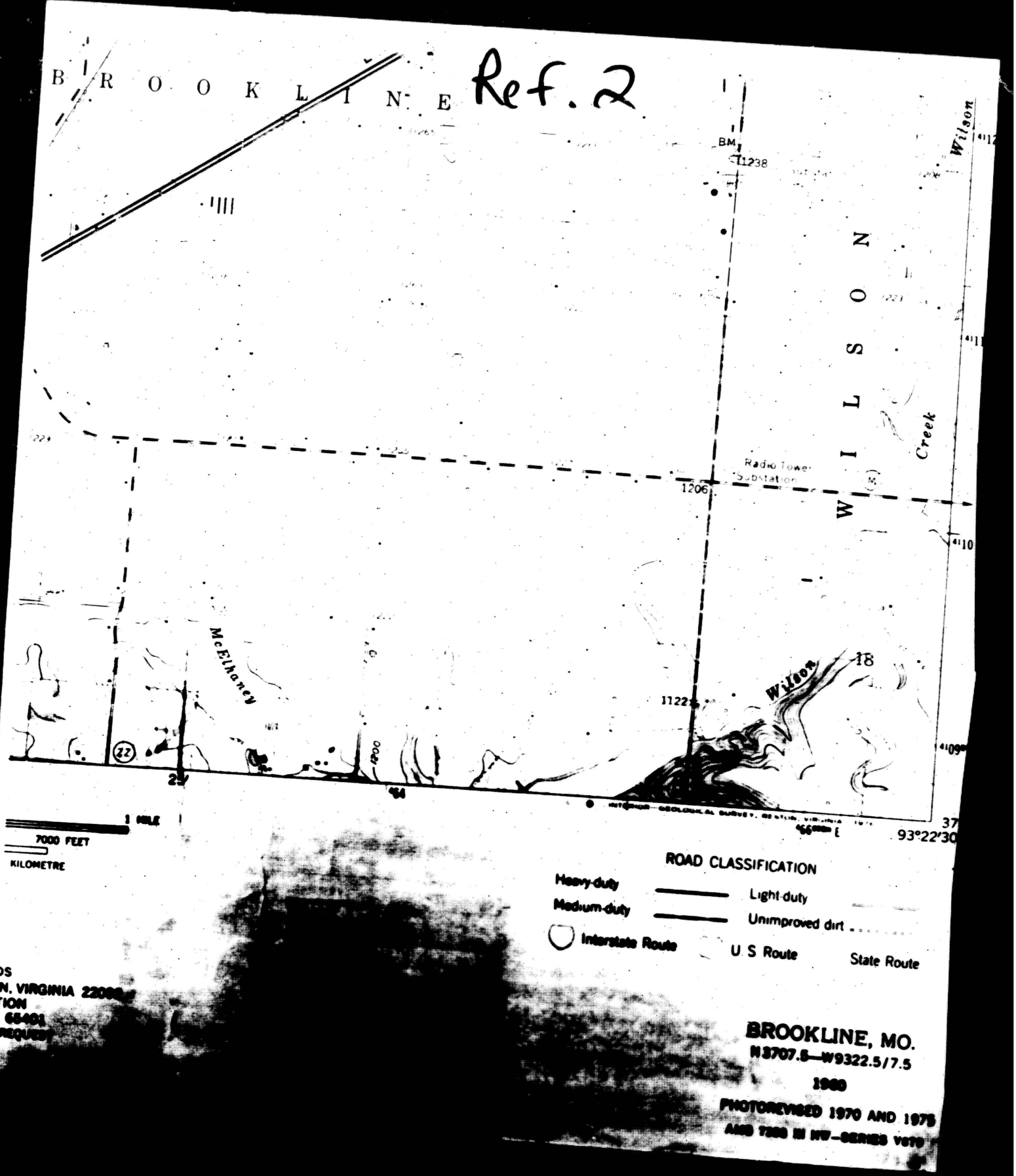
Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10

- N/A and/or data not specified

Sensitive Environment Potential Contamination Factor: 0.270

APPENDIX B

Referenced Documents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1 MILE
7000 FEET
KILOMETRE
93°22'30"
ROAD CLASSIFICATION
Heavy-duty
Light-duty
Medium-duty
Unimproved dirt
Interstate Route
U.S Route
State Route
BROOKLINE, MO.
N3707.5—W9322.5/7.5
1960
PHOTOREVISED 1970 AND 1975

Ref. 1

Litton Systems
MODOO 7162903
1.5

12-23-88

HAZARDOUS WASTE SITE INSPECTION REPORT
Litton Industries - Advanced Circuitry Division
Springfield, Missouri

December 23, 1988

Prepared by
Charles L. Kroeger
Springfield Regional Office
Department of Natural Resources

Ref. 3

LATITUDE AND LONGITUDE CALCULATION WORKSHEET #2
LI USING ENGINEER'S SCALE (1/60)

SITE NAME: Litton Systems, Inc, Advanced Circuitry Division CERCLIS #: _____

AKA: _____ SSID: _____

ADDRESS: _____

CITY: Springfield STATE: MO ZIP CODE: _____

SITE REFERENCE POINT: _____

USGS QUAD MAP NAME: Brookline TOWNSHIP: 29 (N)/S RANGE: 22 E/(W)

SCALE: 1:24,000 MAP DATE: 1960 SECTION: NE 1/4 SE 1/4 SW 1/4

MAP DATUM: (1927) 1983 (CIRCLE ONE) MERIDIAN: _____

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP (attach photocopy):

LONGITUDE: 93 ° 22 · 30 " LATITUDE: 37 ° 07 · 30 "

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' GRID CELL:

LONGITUDE: 93 ° 22 · 30 " LATITUDE: 37 ° 12 · 30 "

CALCULATIONS: LATITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM LATITUDE GRID LINE TO SITE REF POINT: 404

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 133.48 "

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 2 · 13 · 48 "

D) ADD TO STARTING LATITUDE: 37 ° 12 · 30 · 00 " + 2 · 13 · 48 =

SITE LATITUDE: 37 ° 14 · 43 · 48 "

CALCULATIONS: LONGITUDE (7.5' QUADRANGLE MAP)

A) NUMBER OF RULER GRADUATIONS FROM RIGHT LONGITUDE LINE TO SITE REF POINT: 9

B) MULTIPLY (A) BY 0.3304 TO CONVERT TO SECONDS:

A x 0.3304 = 2.97 "

C) EXPRESS IN MINUTES AND SECONDS (1' = 60"): 0 · 2 · 97 "

D) ADD TO STARTING LONGITUDE: 93 ° 22 · 30 · 00 " + 0 · 2 · 97 =

SITE LONGITUDE: 93 ° 22 · 32 · 97 "

INVESTIGATOR: Carolyn McManigal DATE: 8-26-93

[redacted]

Ref. 4

Litton Systems
MOD007952
1.3
Mo Dep. of Nat.
Ref. 1-27-88

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
LABORATORY SERVICES PROGRAM

Report of Sampling Investigation
Litton Industries
Springfield, Missouri
January 27, 1988

INTRODUCTION

Information received by the Missouri Department of Natural Resources indicates that liquid plating waste was discharged onto property owned by Litton Industries. Litton manufactures printed circuit boards, the process of which includes plating with copper pyrophospnate, nickel, rhodium, gold, and tin. Plating waste has been disposed of by irrigation on Litton property, discharged into a sinkhole on Litton property, and by discharging into ponds which overflowed into terraced leach fields on Litton property. The ponds have since been cleaned out and dozed in, and the sludges from the ponds were hauled to an approved waste disposal site. All of these disposal processes took place in the same general area of property owned by Litton, at different time intervals. The waste is reported to have contained toxic metals and possibly organic solvents, and may pose a threat to the shallow groundwater. At the request of the Waste Management Program, a sampling investigation was conducted by Ken Teeter of the Laboratory Services Program, Environmental Emergency Response Unit, accompanied by Mr. Chuck Kroeger, of the Springfield Regional Office.

METHODS

The former leach field used by Litton Industries was divided into two sections: the upper leach field area, and the lower leach field area. A site map indicating the upper and lower leach fields is attached as Appendix A. One composite soil sample of five aliquots was collected from the upper leach field area, and one composite soil sample of six aliquots was collected from the lower leach field area. Duplicate samples were collected, with the duplicate going to personnel from Litton Industries. One soil background sample was collected from the eastern front lawn of the Litton property. Soil samples were collected by drilling approximately twelve inches into the soil using a one and one-half inch diameter hand auger, collecting the cuttings in a clean aluminum tray, thoroughly mixing the aliquots (if applicable), and spooning the sample into appropriate sample containers supplied by the Divisional Laboratory.

Ref. 5

RECEIVED

[illegible]

Litton Industries

Litton Industries' Advanced Microwave Division is located adjacent to the Springfield Regional Airport on Highway 65 (Kearney Street) 1.5 miles west of the junction of Highway 65 and Kearney Street (Highway 744). The legal description is [illegible] Section 6, T29N, R22W.

Litton Systems
M0000719903
1.5

The Litton site is owned by: Litton Industries, Inc.
360 North Crescent
Beverly Hills, CA 90210

--2-85

Litton began operation at the site in about 1964, manufacturing printed circuit boards. Processes included in the operation are plating with copper pyrophosphate, tin nickel, rhodium, gold, and tin.

Litton initially disposed of wastewater by irrigation and by discharging to a sinkhole on the Litton property. This was discontinued after ponds were constructed for storage and settling. Wastewater and sludges were also discharged through a series of terraces into a pit. The soils were determined to have an ion attraction to the copper as the wastewater percolated through it. What didn't bind into the soils flowed into the pit. The entire area around the site is saddened with sinkholes and has been determined to be a recharge area for springs to the north, east and west. In about 1975 the sludges were removed from the pits, drummed up, and disposed of at an approved facility. Wastewater from the plant was then discharged to a lagoon system which also was later abandoned, cleaned out and dozed in. The sludges from the lagoon were hauled to an approved waste disposal site. The company was connected to the Springfield municipal sewerage system and installed a pretreatment [illegible] of plating wastes.

Copper is known to be the predominant waste at the site however, there may also be some solvents such as TCE. Quantities and concentrations are not known. The sludge has been removed but soils where land application was done through overland flow and irrigation may have high concentrations of copper and/or solvents.

Some copper compounds are toxic and TCE is a carcinogen. The specific copper compounds found on the Litton site are not known at this time.

Because of the karst topography of the area there is a potential of groundwater contamination. There is no surface water runoff in the site area. Contaminants would be limited to those leached from the soils on the gently rolling site.

The area surrounding the site is zoned industrial with some pasturing of beef and dairy cattle. There is very little residential

Ref. 6

3.500 Greene County
Litton Industries

NW to EPA
Send cc
attention Don D
Dow

September 26, 1979

Mr. James K. Dow
Facilities Manager
Advanced Circuitry Division
P.O. Box 2847 C.S.S.
Springfield, MO 65802

Dear Mr. Dow:

This is to confirm our visit of September 25, 1979.

Two violations of Regulation 10 CSR 20-7.010 were noted. An overflow from the copper waste lagoon had occurred and additionally sanitary wastes from the irrigation site were entering the sinkhole.

It is our opinion that adequate planning and operation could have prevented both violations. The letter of approval for operation, issued February 18, 1976, specified, as a condition of approval, that influent flow as well as basin percolation rates be determined. Influent flow measurements would have brought to your attention the problems of extraneous flows in days or weeks rather than months. Irrigation of sanitary wastewater only during periods when the soil is not saturated, and moving the irrigation equipment periodically, should prevent the direct discharge to the sinkhole. In numerous visits to the plant, the irrigation header has always been in the one general area just southwest of the large sinkhole.

Your cooperation in preventing a reoccurrance of the conditions found during our visit will be expected. If you have any questions, please advise.

Yours truly,

Ed Sears
Environmental Specialist III
Springfield Regional Office
Department of Natural Resources

ES/jo

cc: Mr. Bob Hentges - Water Pollution Control Program
Mr. Bob Corson - City of Springfield

Ref. 7

LABORATORY SERVICES PROGRAM
REPORT OF SAMPLE ANALYSIS

SAMPLE NO. 81-9619

Re: Litton Ind.
MOD007152903
1,2
MALK
4-20-81

Reported to John Nixon, Regional Administrator Date 4-20-81

Affiliation Springfield Regional Office

Sample Description 2-40 ml vials from Litton East Well Labeled sample #1 on tag.

Collected by Burt McCullough Date 3-24-81

Affiliation Springfield Regional Office

Remarks

PARAMETERS	RESULTS	UNITS	REMARKS
vinyl chloride	132	ug/l	
1,1-dichloroethylene	8.1	ug/l	
1,1-dichloroethane	176	ug/l	
trans-1,2-dichloroethylene	335	ug/l	
1,1,1-trichloroethane	63	ug/l	
1,2 dichloropropane	79	ug/l	
trichloroethylene	17	ug/l	

The analysis of this sample was performed in accordance with procedures as outlined in the latest edition of Standard Methods for the Examination of Water and Wastewater, EPA manual of Methods for Chemical Analysis of Water and Wastes, and/or Annual Book of ASTM Standards.

James H. Long

James H. Long, Director
Laboratory Services Program
Division of Environmental Quality

JHL/mvm

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 1368 2010 Missouri Blvd. Jefferson City, Missouri 65102 (314)751-3241

CHRISTOPHER S. BOND Governor
Fred A. Latser Director

Division of Environmental Quality
Robert J. Schreiber Jr., P.E. Director

Ref. 8

Report of Investigation
Litton Advanced Circuitry Division
May 20, 1981

INTRODUCTION

At the request of the Water Pollution Control Program, an investigation was conducted of the Litton Advanced Circuitry Division in Springfield, Missouri, and various sites in the vicinity during the period from 1000 to 1800, May 20, 1981. The purpose of the investigation was to determine the source of volatile organics found in earlier analyses, and the effect on local ground water. Sampling was performed by David Paulsen and Larry Alderson of the Laboratory Services Program, DEQ. Personnel involved in the inspection included Jim Dew, Production Engineer with Litton, Bob Carson and Karen Chandler, with the City of Springfield, and Burt McCullough and John Nixon of the Springfield Regional Office.

METHODS

Grab samples were collected by filling appropriate containers while maintaining a zero head space to prevent the loss of volatile organics.

At the request of Litton representatives, two (2) extra sets of samples were collected for comparative analyses. Samples were collected at each of the following locations:

Sample Number	
81-6227	- Fulbright Springs - included as a control.
81-6228	- Unnamed spring located on Stephens property feeding Clear Creek (this site was substituted for the upper end of Clear Creek at Clear Creek Park off Rt. AB - permission to enter the property was denied).
81-6229	- Ritter Spring #1 West
81-6230	- Ritter Spring #2 East
81-6231	- Fantastic Caverns - cave spring
81-6232	- Fantastic Caverns - potable water supply
81-6233	- Little Sac River - at Fantastic Caverns
81-6234	- Litton Sanitary Lagoon

March 26, 1982

• Ref. 9

CERTIFIED MAIL P26 0335887

RECEIVED

MAR 29 1982

SOLID WASTE
MANAGEMENT PROGRAM

Mr. Ron Enos, President
Advanced Circuitry Division, Litton Industries Inc.
P. O. Box 2847, 4811 West Kearney
Springfield, Missouri 65803

Dear Mr. Enos:

The Department of Natural Resources is hereby issuing an emergency directive to Advanced Circuitry Division of Litton Industries, hereinafter referred to as Litton ACD, in accordance with 10 CSR 25-7.011 (2) (B).

This order is effective immediately and replaces the emergency directive dated March 19, 1982.

The Department of Natural Resources is hereby advising Litton ACD that a catastrophic sinkhole collapse could occur in the bottom of Pond A at any time. If this occurs, the total contents of Pond A, including wastewater and hazardous sludge, would be discharged directly to the groundwater. To minimize the chances of this hazard occurring, Litton ACD is hereby authorized and directed to take the following actions:

1) Litton ACD shall discharge as much wastewater as possible and acceptable to the Springfield city sewer until all liquid portions are removed from Pond A.

2) As an alternate to the Paragraph (1), and as may be necessary to empty the lagoon, wastewater from Pond A shall be applied by spray irrigation on Litton ACD property (50 acres more or less available for spray irrigation) at a rate of approximately one-third inch per day.

3) Wastewater shall not be applied directly to any known sinkholes on the property.

4) Removal of the liquid portion of the lagoon reduces the danger of a catastrophic collapse of Pond A. However, hazardous sludge and contaminated soil will remain in the lagoon bottom posing a threat to groundwater if a sinkhole should develop in the lagoon bottom. For that reason, Litton ACD is hereby ordered to submit to the Waste Management Program, for approval, a revised closure plan specifically addressing removal of the sludge and contaminated soil. This plan shall include a revised timetable and shall be submitted by April 15, 1982.

5) Litton ACD shall report to DNR Springfield Regional Office on a daily basis advising DNR of their progress. A log of all actions taken by Litton regarding this project shall be maintained and provided DNR on a weekly basis.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 1368 2010 Missouri Blvd. Jefferson City, Missouri 65102 (314) 751-3241

● Ref. 10 ●

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
324 EAST ELEVENTH STREET
KANSAS CITY, MISSOURI - 64106

Site: LITTON
ID #: MOD007152903
Break: 11.6
Other: LITTON
11-10-82

NOV 10 1982

EPA I.D. NO: MOD007152903

Mr. David Edwards
Litton Advanced Circuitry
P.O. Box 2847, Commercial Station
Springfield, Missouri 65803

Dear Mr. Edwards:

We have reviewed the report on closure of the hazardous waste lagoon submitted on October 27, 1982. The report on closure contained sufficient detail for us to determine how the lagoon was actually closed. The inspection reports were particularly helpful. This letter constitutes approval of the report and the Resource Conservation and Recovery Act (RCRA) closure activity at your facility. We appreciate the cooperation received from Litton during review of the closure plan.

Any questions on this letter should be directed to Karen Flournoy at (816) 374-6531.

Sincerely yours,

Robert L. Morby
Chief, Waste Management Branch
Air and Waste Management Division

cc: MDNR - Paul Meiburger
Hood-Rich-Paul Hickman

MDNR Ref. 11

Litton Registry File
Greene County
C

JOHN ASHCROFT
Governor

G. TRACY MEHAN III
Director

STATE OF MISSOURI

Division of Energy
Division of Environmental Quality
Division of Geology and Land Survey
Division of Management Services
Division of Parks, Recreation, and Historic Preservation

DEPARTMENT OF NATURAL RESOURCES

MEMORANDUM

Litton Fnd
MOSCE7152F03
1, 3
MDNR
12-14-89

DATE: December 14, 1989

TO: Litton Registry File, Greene County

THROUGH: Mr. Jim Belcher, Unit Chief, Planning and Pre-Remedial Unit, Superfund Section, WMP

FROM: Mr. Kevin Kelly, Environmental Specialist, Superfund Section, WMP

SUBJECT: Litton Registry Status

The status of the Litton Registry proposal regarding a portion of their property located in Greene County has been on hold due to the pending receipt of a revised Cleanup Assessment from the Missouri Department of Health (MDOH). The final Cleanup Assessment has now been completed. The Cleanup Assessment designates recommended safe soil levels of contaminants in the soil for any use (residential or commercial). A copy of the Cleanup Assessment is attached.

The contaminant levels found on the Litton property do not exceed these recommended safe soil levels except in the case of total lead. Lead was detected on the Litton property at a level of 290 ppm. The MDOH recommended safe soil level for any use at the site is 238 ppm. Although the safe lead level is exceeded, total lead cannot be characterized as a RCRA hazardous waste by definition unless the total lead content fails EP Toxicity testing or can be identified as a constituent generated from a listed non-specific or specific source hazardous waste that may have been disposed on the Litton property. MDNR lab data indicates lead does not fail EP Toxicity testing and we currently do not have evidence to prove the lead was generated from a listed hazardous waste.

Trichlorethlyene (TCE) was also detected in the soil at a level of 29 ppm which is below the recommended MDOH safe level of 71 ppm. Ritter Spring located off site revealed a level of 68 ppb TCE, well above the MDOH recommended safe level of 5 ppb. The exact source of the TCE contamination found in Ritter Spring is inconclusive. More hydrogeological studies are needed to determine the source of TCE. It is reported that several industries in this area use TCE.

[redacted]

Ref. 12

SCS ANALYTICAL LABORATORY
[illegible] AVENUE
LONG BEACH, CALIFORNIA [illegible]
[illegible]

MEMO

To: Jeff Stewart

From: Lam V. Ho

February 13, 1991

Job No.: 0290008.01

LABORATORY REPORT

Samples: Fifteen (15) water samples and nine (9) soil samples from Litton ACD, received 01/29/91 and analyzed 2/04/91, 02/07/91, 02/08/91, 02/11/91 and 02/12/91. One (1) soil sample (B-B4-7) broken during shipment.

Sample ID	Cu (200.7)	Ni (200.7)	Zn (200.7)	CN^- (9010)
	mg/kg			
B-B1-5.5	10	38	50	ND
B-B1-10	12	27	56	ND
B-B2-6	830	36	61	ND
B-B3-5	5	ND	20	ND
B-B3-10	6	12	29	ND
B-B3-15	9	11	39	ND
B-B4-5	47	13	24	ND
B-B4-7	9	ND	20	ND
B-B4-10	25	25	50	ND
Detection Limit	2	10	2	1

ND - Not Detected

EPA 8240 and EPA 601 - see attached sheets

Loree Kenyon
Loree Kenyon
Chemist

Lam V. Ho
Lam V. Ho PhD, REP
Laboratory Director

litton5.rep

Ref. 13

RECEIVED

AUG 04 1993

SARA SECTION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
205 JEFFERSON STREET
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102

IN THE MATTER OF	)	
	)	
LITTON SITE, SPRINGFIELD GREENE COUNTY, MISSOURI	)	CONSENT AGREEMENT MDNR APPEAL NOS. SF-91-7A AND SF-91-8A
	)	
	)	
	)	
Litton Systems, Inc., Advanced Circuitry Division APPELLANT	)	
	)	
	)	
PROCEEDING UNDER 10 CSR 25-10.010(2)E OF THE MISSOURI HAZARDOUS WASTE MANAGEMENT REGULATIONS	)	

Ref. 14

data obtained from the storm water retention and Zenith/Pepsi Cola ponds. EPA and MDNR representatives determined that a stormwater permit application was unnecessary (Ref. 39).

3.0 ENVIRONMENTAL SETTING

This section of the report summarizes available information regarding the quality of site soils, surface water, and groundwater.

3.1 Water Supply

The City of Springfield supplies potable water to properties within a four-mile radius of the site. The water intakes are in the James River, Fellows Lake, McDaniel Lake, and Fulbright Spring. Each of these surface water intakes constitute approximately 25 percent of the drinking water for the Springfield area (Ref. 28). The City of Springfield also has an additional 13 groundwater wells. Of these 13 wells, three are used for the distribution system and the remaining ten are used as reserve (e.g., in the event of drought). The percentage of the drinking water supply contributed by groundwater ranges from 0.8 to 3.5 percent. Groundwater is used in general to improve the quality of the surface water rather than to supplement the supply.

Based on available well records filed with MDNR, there are 174 water supply wells within a four-mile radius of the site. Table 3-1 contains a listing of the area wells (Ref. 29). There are no wells located on the Zenith site (Ref. 3).

3.2 Surface Water

The primary surface water drainage pathway across the site is to the north and west, toward the storm water retention and fire sprinkler water system ponds (Ref. 39). The Zenith/Pepsi Cola pond receives runoff from the Zenith parking lots, off-site parking lots, city streets and the adjacent railroad right-of-way. In addition, the Zenith/Pepsi Cola pond also receives overflow from the fire sprinkler water system pond. These stormwater retention areas are designed to contain most facility runoff. In the event that the storm water retention pond exceeds capacity, there is an outlet drain to the city sewer system (Refs. 36 and 39). Runoff from the site, which does not enter the retention ponds, may flow to the west and northwest to an intermittent stream located approximately 2,000 feet northwest of the site. Approximately two miles northwest of the site, the intermittent stream empties into the South Dry Sac River (Ref. 1). The South Dry Sac River is used for fishing and other water recreation activities. There are no other surface water bodies within 1,000 feet of the site, with the exception of the ponds (Ref. 3).

Ref. 15

R MINES, ROLLA MO

neker

Campbell | WELL No

Chesser

9-2-1937

PRODUCTION

1 GPM

SAMPLES SAVED

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RESOURCES

LOG NO.	OWNER	
10,751	C.E. FILES	
COUNTY	FARM	WELL NO.
GREENE	1407 West Nichols Springfield Mo.	
T 29 / R 22W	DRILLER Berg Bros	
	DATE 8-7-47 8-20-49	
14	ELEV. (Hall) 1286	PROD. 22 g.p.m.
	LOGGED BY McNeal 5/19/49	

REMARKS [illegible] 35' 10" of 6¼" Casing [illegible]

SAMPLES SAVED

SWL 15'

WL 5168

MISSOURI BUREAU OF GEOLOGY & MINES, ROLLA, MO

MO SURVEY No	OWNER	
5839	IRENE BRINKMAN	
COUNTY	FARM	WELL No
Greene	625 Kansas Ave	
T 29 / R 22W	DRILLER Wm Scheffltzel	
	DATE Nov 1939	
15	ELEVATION 1305	PRODUCTION
	SAMPLES STUDIED Grohskopf - McCracken	

REMARKS 27 ft of 6¼" csg

SAMPLES SAVED

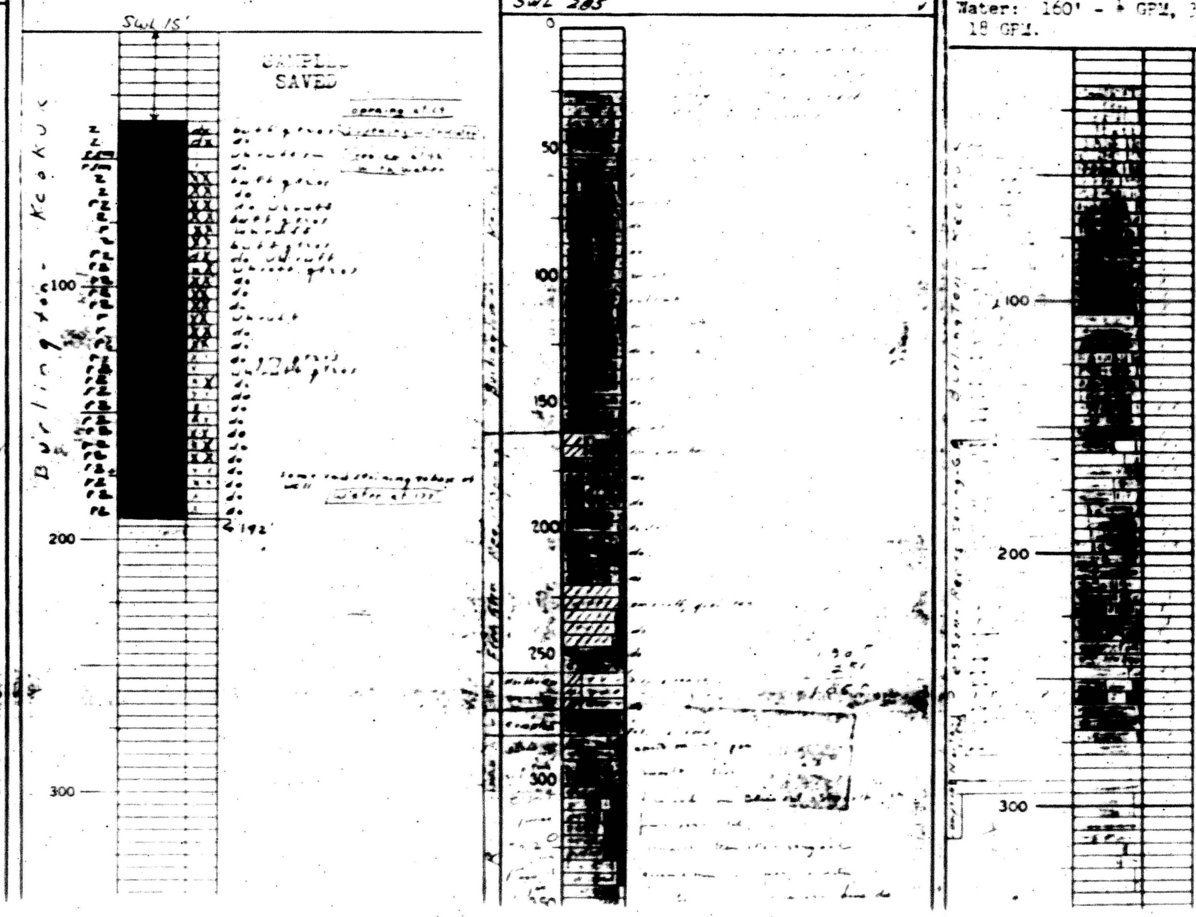
SWL 285

STATE OF MISSOURI
DIVISION OF
GEOLOGICAL SURVEY AND WATER RECOURCES

LOG NO.	OWNER	
20,448	Adrian Orr	
COUNTY	FARM Lat 37°9'45" Long 93°24'30"	WELL NO
Greene		
T 28N / R 23W	DRILLER Lloyd Brown	
	DATE	
2	ELEV 1274	PROD 20 GPM
	LOGGED BY C.E. Robertson April 1962	

REMARKS 22'6" of 6¼" csg.; 6" hole @ bottom.
Water: 160' - ¼ GPM, 370'-2 GPM, 470'- 18 GPM.

INDEX SHEET NO



Ref. 16

Jacobs Engineering Group Inc.
Kansas City Operations

Telephone Conversation Record

Date/Time of Call	2-27-67 / 8:30 a.m.	☐ Incoming	☑ Outgoing
Recorded By:	Carolyn M. Mansfield (Signature required for HRS related TCRs)	Title:	Site Manager (Project Manager, Site Manager, etc.)
Jacobs Project No./WBS	12D25312/513	Client:	EPA
Person Contacted (Name, Title)	Lisa Conway, Data Spec	Phone No.	276-3711
Person Contacted (Organization/Agency)	US Census Bureau		
Subject:	County Multipliers		

Conversation Summary

Jacobs (Questions/Replies)	Contact (Questions/Replies)
(1) What is the average population per household for Greene County, Missouri?	(1) 2.43

Action Items	Due Date
1	
2	

Ref. 17

Jacobs Engineering Group Inc.
Kansas City Operations

Drinking Water Questionnaire

Date/Time of Conversation	3/15/93 1030		
Recorded By:	Signature (required)	Title:	Site Manager (Project Manager, Site Manager, etc.)
Jacobs Project No./WBS	20253-(511)	Site:	
Person Contacted (Name, Title)	Chuck Aderhold, Laboratory Analyst	Phone No.	417-831-8837
Person Contacted (Organization/Agency/City/State)	City of Springfield, Utilities Laboratory		

Conversation Summary

1. Does the community have a centralized drinking water supply system? ☑ Yes ☐ No | 2. Name: Springfield City Water
3. Is it public or private? ☐ Private ☑ Public | 4. Source of drinking water: ☐ Groundwater ☐ Surface Water ☑ Combination
5. Can the water company provide a system distribution map? City will send ☑ Yes ☐ No
6. Does the system supply water to any other community? ☐ Yes ☑ No | Community:
7. Do neighboring communities have drinking water supply systems (ask for contacts)? ☐ Yes ☑ No | Contacts:
8. What are the names of the drinking water sources (i.e. Wellfield Number 1)? James River, Fellers Lake, McDaniel Lake, Fulbright Spring
9. Total population served by the system: 150,000 (population of Springfield)

For a groundwater supply system answer the following questions. For surface water supplies go to page 2.

Well Number	Depth	Aquifer	Well Status	Pumping Rate	% of Supply	Location
3 wells	"Deep"		Stand by/Emergency Source	0	0	See Map
other wells			Not used	0	0	See Map

A. Explain any well closings. None

B. Is the water system interconnected such that water from any well is capable of reaching any part of the system? Yes

C. Has the groundwater recently been tested (for what and results)? ☑ Yes ☐ No | Results Available? ☐ Yes ☑ No

Water is tested daily

D. Have there been any problems with groundwater contamination in the area? ☐ Yes ☐ No

Explain.

Ref. 18

JE *Jacobs Engineering Group Inc.*
Kansas City Operations

PAGE 1 OF 1 [illegible]

Telephone Conversation Record

Date/Time of Call	6/10/93 9:45 am ☐ **Incoming** ☒ **Outgoing**
Recorded By:	Dave [illegible] — **Title:** Site Manager
Signature (required for HRS related TCRs)	(Project Manager, Site Manager, etc.)
Jacobs Project No./WBS	13D253-15 (511) — **Client:** Radium Pot (EPA)
Person Contacted (Name, Title)	Chuck [illegible] Lab Analyst — **Phone No.** 417 [illegible]
Person Contacted (Organization/Agency)	City of Springfield
Subject:	[illegible] well-water use in Springfield

Conversation Summary

Jacobs (Questions/Replies)	Contact (Questions/Replies)
Which wells on the water distribution map you sent is [illegible] the [illegible] wells?	Orchard Crest, Kansas, and Fairview
What about the one labelled [illegible]?	Boggard is ~~an [illegible] name~~ the name of the ~~[illegible]~~ tank that is near the Orchard Crest well.
Is the Orchard Crest well the one labelled Boggard?	Essentially.
[illegible] water and how frequently are those wells used?	The wells are more expensive to get water from than the intakes so they are used [illegible] times when [illegible] water becomes [illegible] in the summer.

Action Items — **Due Date**

1

2

Ref. 19

Jacobs Engineering Group Inc.
Kansas City Operations

PAGE 1 OF 1

Telephone Conversation Record

Date/Time of Call	4-15 2:15	☐ Incoming ☒ Outgoing	
Recorded By:	Lisa Scaife (Signature required for HRS related TCRs)	**Title:**	Site Manager (Project Manager, Site Manager, etc.)
Jacobs Project No./WBS	12D25314	**Client:**	EPA
Person Contacted (Name, Title)	Julie Daech	**Phone No.**	(314) 368-2178
Person Contacted (Organization/Agency)	MDNR - Wellhead Protection		
Subject:			

Conversation Summary

Jacobs (Questions/Replies)	Contact (Questions/Replies)
Is Springfield in a Wellhead Protection Area?	Yes

Action Items	Due Date
1	
2	

Ref. 20

```
NEXT

nter program execution mode: B (batch) or I (interactive)
EMS> I


ITTON
ATITUDE   37:14:44   LONGITUDE   93:22:33      1983 POPULATION
```

M	0.00-.400	.400-.800	.800-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
1	0	0	0	0	0	0	0
2	0	0	0	0	271	0	271
3	0	0	0	0	0	0	0
4	0	0	0	0	0	869	869
5	0	0	0	1814	727	2122	4663
6	0	0	0	0	1513	4386	5899
7	0	0	0	0	1400	6324	7724
8	0	0	0	0	2003	0	2003
9	0	0	0	0	159	712	871
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	640	640
13	0	0	0	0	0	0	0
14	0	0	0	0	862	0	862
15	0	0	0	0	0	0	0
16	0	0	0	0	68	16	84
ING OTALS	0	0	0	1814	7003	15069	23886

```
ress RETURN to continue
REPORT LITTON successfully created

ENU: Geodata Handling Data List procedures

.  Site level retrieval of data                          (SITERET)
.  Access Census Data                                    (CENSUS)
.  Determine County Coverage                             (COVERAGE)
.  Geographic Data Management                            (GEODM)
.  HUCODE/SOIL locator                                   (HUCODE)
.  Convert to Lat/Long                                   (LATLON)
.  Lookup/Examine Star Station Data                      (STAR)
.  Find US cities                                        (USCITY)
.  Find Soil Survey Status of Counties                   (SSURVEY)
). 70, 80, 90, 95 Demographic Data Retrieval             (SUPERPOP)

nter an option number or a procedure name (in parentheses)
 a command: HELP, HELP option, BACK, CLEAR, EXIT, TUTOR
EMS>
```

Ref. 21

MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION
2901 West Truman Boulevard
Jefferson City, Missouri

Telephone: 314/751-4115
Missouri Relay Center 1-800-735-2966 (TDD)
JERRY J. PRESLEY, Director

April 12, 1993

Ms. Traci A. Phillips
Jacobs Engineering Group Inc.
10901 West 84th Terrace
Suite 210
Lenexa, KS 66214

Re: 19 Sites in Missouri

Dear Ms. Phillips:

Thank you for your letter of March 17, 1993 regarding threatened and endangered species within the proposed project areas.

Department staff examined map and computer files for federal and state rare, threatened and endangered species and determined that sensitive species or communities are known to occur on the immediate sites or surrounding areas. Please see the Heritage Data Base reports attached to the site location descriptions.

The absence of further occurrences of sensitive species and natural communities does not mean that they do not occur within the impacted area, merely that no additional information is known at this time. This report should not be regarded as a final statement on the presence or absence of rare or endangered species or high quality natural communities; only an on-site inspection can verify the absence or existence of such species or communities.

Thank you for the opportunity to review and comment.

Sincerely,

Dan F. Dickneite

DAN F. DICKNEITE
PLANNING DIVISION CHIEF

DFD:GTC:cgl